The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 131, NO. 2 — CHICAGO, ILLINOIS — MAY 11, 1946

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SOME CONTRIBUTIONS FROM THE SISTER SCIENCES

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No branch of science or art furnishes a more striking example than does medicine of the fact that increasing specialization is necessarily accompanied by increasing interdependence and cooperation among the specialized fields. In the early days all the sciences were combined together, frequently in the same individual. Later the various specialties had a tendency to run their separate courses. Now we find them coming together again for mutual support. It is something like the story of the prodigal son, who, after the adventures of an independent career, is glad to come back again to his family.

This is well illustrated by the development of the significance of the word "physics," which in the original Greek meant "that which pertains to nature." It was used to designate those phenomena of the natural or material world as contrasted with things mental, or moral, or spiritual, or imaginary. Originally the word referred to all living things, including the human body, as well as to phenomena of the inanimate world. Later it took on more specialized meanings but always retained this twofold aspect, on the one hand relating to the inanimate world and on the other to the human body. We still find in Webster's dictionary two definitions of a physicist. The first definition given is "one versed in medical science." The second definition is "a specialist in the natural sciences." One who follows my profession of physicist is in France called a physicien, while in English the word "physician" means a medical practitioner. Similarly in Germany I would be called a physiker, whereas in English-speaking countries a physicker is one who administers a physic. But whereas those words which have the same original root have followed these two lines of continually narrowing significance, the progress of modern science is in many ways bringing the two together because on every hand the natural scientist is bringing more and more to the service of the physician his increasing knowledge and control of the materials and forces of nature.

The contributions of the sister sciences to medical science and art have in part been in the nature of tools and materials and in part been a better understanding of the fundamental structure and functioning of the human body. From physics, for example, have come such tools as the thermometer, stethoscope, electrocardiograph, x-ray, and a host of other devices ranging all the way from mere gadgets to highly complicated instruments. From the chemist have come such materials as most of the ordinary medicines and drugs in enormous variety, radium and synthetic vitamins. From the physiologist and biologist has come the more detailed knowledge of the structure and functioning of the human body. The psychologists are contributing their share in untangling the complicated relationship between mind and body.

The past history of the Rockefeller Foundation offers a good illustration of the importance which thoughtful students of medical science attach to the sister sciences. This foundation has always attached the greatest importance to the advancement of medical science. About twenty-five years ago, just after World War I, it came to the conclusion that a very important method for the long-term advancement of medical science was the more adequate support of research in the physical and biologic sciences, and this decision was implemented by the great program of National Research fellowships and of grants to support research in the various sciences. This and similar programs by various agencies have paid dividends in a large way, for out of such activities have come, in the past decade, such things as the sulfonamide drugs, DDT, synthetic vitamins, high voltage x-rays, various forms of radiation therapy, radioactive tracer studies and many other medical applications.

Out of this great variety of new contributions to medical science I would describe in brief detail just a few examples which seem to me to illustrate some of the more important trends and developments. These examples are chosen from activities with which I have had some direct or indirect contact, and I make no claim that they are selected with any priority of importance among many other illustrations which some one else would be better qualified than I to describe. However, they are certainly important and are indicative of the trend of things to come.

ARTIFICIAL LIMBS

To the uninitiated there would seem to be nothing new about artificial limbs. The genial ruffian John Silver in Robert Louis Stevenson's "Treasure Island" thumped around on an artificial leg. The more modern artificial legs are more shapely and are likely to have articulated joints. However, they have been far from adequate replacements for the functioning of the natural limb.

During the past war for the first time in history, so far as I know, there has been mobilized a cooperative organization composed of medical men, manufacturers of surgical equipment, physiologists, physicists, skilled instrument makers and inventors in an effort to bring all available knowledge and art to bear on the problem of

Read before the New England Hospital Assembly, March 12, 1946.

creating artificial limbs which will as nearly as possible permit a crippled person to move, act and manipulate in normal fashion. Organized under the Office of Scientific Research and Development, this group is headed by Dr. Paul E. Klopsteg, a physicist, formerly head of the Central Scientific Company and now in charge of graduate study and research in the Technological Institute of Northwestern University. One problem has been the design of artificial legs which have joints with the proper combination of flexibility and stiffness at the appropriate angles to permit walking upstairs or downstairs. Another problem is the design of artificial hands which can be turned and whose fingers can be manipulated through cords attached to muscles in the stump. It is already evident that this combined effort is bringing about a very decided advance in the design of artificial limbs. Though instigated to meet one of the unfortunate conditions resulting from the war, it is a fact that the number of annual amputations resulting from accidents in peacetime considerably exceeds the number of similar war casualties, and it may therefore be said that the focusing of expert attention on this problem at this time should be reckoned as one of the useful results of the war.

SOME PROSPECTS IN BIOLOGY

My colleague Professor Francis Schmitt likens the present prospect in biology to that which faced the physicists and chemists in the early days of this century when it had been discovered that the atom, hitherto believed to be indivisible and in fact so named, had been proved to have a structure of electrical components held together by complex forces. First the exterior electronic structure of the atom and then the inner nucleus of the atom itself have been explored, and all the modern knowledge of spectroscopy, ionization, isotopes and atomic energy has developed with startling rapidity to usher in a new era of physical science. Similarly, the development of new experimental tools such as the ultracentrifuge, the electron microscope and the use of radioactive tracer materials is making possible a new type of quantitative biology far more powerful than the older descriptive biology and beginning to yield significant information regarding the ultimate constitution and fine structure of living matter. There is every reason to believe that these developments of quantitative biology are ushering in a new era for the understanding and ultimate control of fundamental life processes. Let me give a few illustrations which are suggestive of things to come.

Dr. Avery and his co-workers at the Rockefeller Institute have isolated nucleic acid from the capsule which surrounds the pneumococcus. There are several dozen strains of pneumococci and they seem to owe their specific characteristics to substances in the capsule. The capsule can be removed, leaving an organism which, though still alive, is avirulent until a new capsule is formed. If purified nucleic acid which has been isolated from one strain is added to the decapsulated cocci of another strain, the resulting bacteria show the genetic and pathogenic properties of the strain from whose capsules the nucleic acid was prepared. A predictable genetic mutation appears to have been produced. Geneticists have sought in vain to accomplish this in higher organisms. This is a model of the action of genes, which are also supposed to contain nucleoproteins. However, in the case of the capsule nucleic acid the material is a purified compound. The ability of viruses and cell constituents to reproduce themselves is closely correlated with the presence of nucleic acid. This experiment of Avery suggests that the nucleic acid, possibly in combination with a specific protein, acts like a gene.

In the last century it was supposed that enzymes could never be isolated in active form from living cells. Now we know that enzymes are protein molecules which can be isolated, purified and studied, physically and chemically. Will this history repeat itself in the case of genetic determiners, the genes? Will it be possible to determine genetic characters of forms higher than bacteria by administering isolated "genes" or gene activators representing such characters?

As another example, consider substances which have antibiotic action. There are certain substances which have no toxic effect on body cells but which inhibit the reproduction of micro-organisms. Under such conditions the organisms may increase in size but they do not reproduce. This has already had immense medical significance. Moreover, when the structure of a few antibiotics is known, as, for example, penicillin or streptomycin, the organic chemist may alter various groups in the molecules and hope to produce synthetic antibiotics for various diseases for which no natural antibiotic has yet been found.

Another example is the competitive inhibition of enzyme reactions. An enzyme has chemical groupings by which it can cause specific alterations in certain substrates. If a substance closely related to the specific substrate is added to the enzyme, the active groups of the enzyme combine with the substance and the enzyme is effectively poisoned. If the specific substrate itself is added, no reaction occurs. For example, there is an enzyme (cholinesterase) which splits acetylcholine, a powerful nerve stimulant and the hormone which produces smooth muscle contraction. If a tissue is treated with physostigmine, which contains a chemical group similar to that of acetylcholine, the enzyme is poisoned. Physostigmine has been used pharmacologically for years, but the mechanism of the action has only recently been discovered. Along this line a number of investigators have been trying the effect of a variety of compounds closely related chemically to the normal food substances used by bacteria in the hope that they may, by competing with these substances for the enzyme molecules, starve the bacteria to death.

A final example in this field is the development of new technics in the use of the electron microscope which make this instrument even more powerful in the study of biologic material. Fine structure in certain fibrous proteins has already been discovered and many protein molecules, such as the albumins, globulins and fibrinogen, in blood may soon be visualized directly. In the past these molecular shapes had to be deduced by indirect methods. Now that it is possible to visualize these molecules directly, a whole new era is opened up for the discovery of various biologic entities such as viruses responsible for certain diseases. By this means during the war the viruses of influenza were isolated and photographed, and their chemical composition has been determined.

Enzymes and chromosomes can now be observed directly with the electron microscope, and it appears possible thus to determine the physical basis of the gene mechanisms determining heredity.

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By these illustrations I would not wish to imply that all these problems have been solved. What I wish to point out, however, is that new and very powerful technics of investigation have been developed sufficiently to offer a strong feeling of optimism that we are now on the threshold of a period in which knowledge of a most fundamental and important character will be secured in the realm of fundamental biology with applications to medicine.

It is this type of fundamental knowledge which probably forms the most promising basis of the great cooperative attack on cancer which is now being organized. A considerable portion of the funds collected by the American Cancer Society are scheduled for administration by the Committee on Growth of the National Research Council to mobilize all the resources of physics, chemistry and biology for this investigation. It is fortunate that those directing the use of the cancer money realize the importance of fundamental research if there is to be any hope of securing a really significant answer to the cancer problem or to any of the other complicated and obscure problems of disease and health.

SOME EXAMPLES FROM PHYSICAL SCIENCE

I have already mentioned important medical tools like the thermometer, stethoscope and x-ray, which have been contributed from the physical sciences and which are so widely used as to have become commonplace. However, there are new contributions at hand or in sight of great significance of which I shall give only a few illustrations.

Radium and x-ray therapy of cancer have been practiced for several decades. It is only about one decade, however, since the more penetrating x-rays produced at voltages of a million or more have become available for use as a by-product of the physicist's development of high voltage generators for experimentation on the artificial transmutation of atoms. There is still another exceedingly promising prospect involving a modification of this x-ray technic, however, namely the therapeutic use of the high speed electrons, or cathode rays themselves, instead of the x-rays which they would produce on striking the target of an x-ray tube. In other words, the proposal is to shoot the high speed electrons directly into the living tissue instead of irradiating this tissue with x-rays. In either case the biologic or therapeutic action is produced by the same mechanism, namely by the bombardment of the living cells by the secondary electrons produced within the tissues. As far as this therapeutic action is concerned, it makes no difference whether the secondary electrons have been set in motion by x-rays or by high speed cathode rays. However, it may make a great deal of difference to the patient because of a very curious characteristic of cathode rays as they pass through matter.

Cathode rays produce relatively few secondary electrons when they are moving with high speed, and they produce most of the secondary electrons after they have been slowed down and just before they have stopped in passing through the absorbing material. The significance of this fact in cancer therapy is suggested by the following example: Suppose that it is desired to treat a cancer which is located about 1 inch beneath the surface of the abdomen. Electrons or cathode rays produced by a 5 million volt machine are able to penetrate the body to a depth of about 1 inch. If these therefore are directed into the abdomen in the direction of the cancer to be treated, they produce few secondary electrons and therefore little biologic effect near the surface where they enter, but they produce the maximum number of secondary electrons and therefore deliver their maximum therapeutic dose at the depth of about 1 inch, just before they come to rest. This gives a method of concentrating a dose of therapy at any desired depth within the body with a minimum of erythema or biologic action in the path of entrance and with no biologic action in the region deeper than the desired location. The traditional method of x-ray therapy, on the contrary, has a disadvantage, as far as depth dosage is concerned, in that the maximum dosage is greatest at the point where the x-rays enter the body, and the dosage decreases with depth.

Of all the new physical-chemical tools, however, the one which seems to me to have the greatest promise in the medical field is the use of artificial radioactive substances, either as tracers or as therapeutic agents, and I would give two examples which are suggestive of a wide variety of applications on these matters.

Some ten or a dozen years ago Dr. Means and his colleague Dr. Hertz of the Massachusetts General Hospital and the Harvard Medical School became interested in the possibility of using radioactive iodine for the localized therapy of the thyroid gland, especially in cases of such a disorder as toxic diffuse goiter. They did this work in collaboration with Professor Robley Evans, who is in charge of the Massachusetts Institute of Technology cyclotron program and the outstanding scientist in this country in the use of radioactive tracer materials and the quantitative measurement of minute quantities of radioactivity.

Some experiments were first made to see how much iodine would be absorbed into the thyroid gland from the blood stream and how fast it could get there. The radioactive iodine was prepared with the cyclotron, and the early experiments were carried on by injection into rabbits. It was found that within about five minutes all the iodine that could be absorbed by the thyroid gland had been thus absorbed and that, in proportion to the size of the thyroid gland, from twenty to two hundred times as much iodine went to the thyroid gland as to any other organ or tissue of the body. If the rabbit had been on an iodine starvation diet, or if the rabbit had a case of spontaneous goiter, or if it was a pregnant female the higher values of iodine absorption in the thyroid gland were observed. All the quantitative measurements were made with the use of the Geiger counter, that marvelously sensitive instrument which, through ionization of the surrounding air, can detect the presence of radioactive iodine and measure its amount, atom by atom.

Later, similar experiments were carried on with human beings and they have been continued by Dr. Chapman, in collaboration with Drs. Means and Evans since Dr. Hertz entered the Navy early in the war. Having determined the quantities of iodine absorbed in the thyroid gland, the next step was to introduce quantities of radioactive iodine of sufficient amount to have localized therapeutic value because of the radioactive radiations admitted locally from the iodine right in the thyroid gland itself. I understand that upward

of two dozen patients have been thus treated with good results.

This is one illustration of the several possibilities which have been envisaged for the therapeutic use of radioactive materials which can be manufactured with the cyclotron and which have the characteristic of specifically large absorption in certain organs or tissues of the body.

My other illustration has to do with the use of radioactive chemical elements as tracer materials, in which their radioactive properties and their resultant capability of detection by a Geiger counter make it possible to determine accurately and quantitatively the location of these materials at any subsequent time. If, for example, one takes a drink of water containing a little ordinary salt whose sodium has been made radioactive in a cyclotron, it is possible with a Geiger counter to determine how soon this salt has passed through the walls of the stomach into the blood stream and reached any part of the body.

The most interesting recent example of this technic was in the studies of surgical shock and the development of technics for the preservation of whole blood for transfusion during the war. This work was carried on under a basic contract between the Committee on Medical Research of the Office of Scientific Research and Development and the Massachusetts Institute of Technology and was a cooperative enterprise involving also the Massachusetts General Hospital, the Harvard Medical School and the Peter Bent Brigham Hospital. The work was in charge of Dr. John Gibson, Dr. Joseph Aub and Professor Robley Evans. The program was supplemented by work also by Dr. Ross of the Evans Memorial Hospital, Dr. Denstedt of McGill University, Dr. Strumia of the Bryn Mawr Hospital and others, all of them utilizing the materials produced by the Massachusetts Institute of Technology cyclotron and the radioactive measurements by Professor Evans and his colleagues.

Radioactive iron was the material used because of its importance as a constituent of hemoglobin. Two types of radioactive iron were used, one manufactured with the cyclotron by bombardment of cobalt, and the other by the bombardment of manganese, and the two types could be distinguished in subsequent measurements by the fact that the former lost its radioactivity at the rate of one half in five years, and the other at the rate of one half in forty-seven days.

When experiments on blood transfusion were carried out, one of these radioactive forms of iron was injected into the recipient of the blood transfusion so as to tag his own red corpuscles, and the other type of radioactive iron was injected into the blood donor so as to tag the red corpuscles of the blood used in the transfusion. By this means one type served as the control and the other type served as the experimental blood donor source.

By these technics several extremely important investigations could be carried out. One had to do with the reaction of the various blood types on one another. It was possible, for example, to find out whether blood from a group O donor with a high anti-A titer, when transfused into a recipient with a different blood type, lost its potency in the presence of the second type, or vice versa. By this method some new discoveries were made regarding the interaction of blood types which greatly safeguarded blood transfusion and which have been proved to have application in certain situations in childbirth as well as in surgery.

But the greatest wartime contribution of this method was for determining the best methods for preservation of whole blood and for setting up the technical standards for the great blood donor program. By the device of using the tagged iron atoms in the donor's blood, direct evidence could be obtained regarding the potency of this blood after various durations of storage at various temperatures when admixed with various suggested preservatives. All that it was necessary to do at the end of any given storage period was to transfuse this blood into a recipient and shortly thereafter determine the amount of the donor's blood which still remained active in his blood stream. It was by this method that there was established the national standard specifying that after twenty-one days of storage at least 70 per cent of the transfused red cells must remain in circulation of the recipient for at least twenty-four hours.

GENETIC CHANGES

During the past decade or two an increasing amount of interest has been focused on the genetic changes which can be produced by x-ray or neutron radiations. The best known example is that of the drosophila or fruit fly, which, after exposure to x-rays, has a certain probability of producing new species characterized by red eyes or other new characteristics. One of the most interesting illustrations has been the production of new species of plants by strongly irradiating the germinating seeds with x-rays. In this way a new type of tobacco plant with a 13 foot leaf has been produced, as one of many examples of agricultural possibilities.

To the medical profession this phenomenon is of interest because of the possibility that by action of x-rays, neutrons or other high speed particles new types of biologic materials may be produced. These may be new types of dangerous germs, as, for example, new variations of influenza, or conversely they may be new types of beneficial medical material, derived, like penicillin or herb extractions, from living matter. Experiments have gone far enough to prove that there are possibilities along these lines and to suggest that there may here be an enormous field of importance to medical science of which we are just on the threshold.

This field was opened up by x-rays and cyclotrons. Probably the great uranium piles which have been designed in connection with the atomic bomb development and which give off enormous quantities of radiation may supply a new radiation tool for medical science. It may be possibilities of this general type which are suggested when we hear that the new developments in the production and control of atomic energy have potentialities in agriculture and medicine as well as in mechanical power and warfare.

CONCLUSION

I hope that these illustrations, selected more or less at random, may serve to suggest the possibilities which apparently lie ahead in the near future as goals for those scientists in the various fields who would cooperate with medical science in advancing our knowledge of living processes and developing still more powerful arts of medical science.

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RADIOACTIVE IODINE IN THE STUDY OF THYROID PHYSIOLOGY

VII. The Use of Radioactive Iodine Therapy in Hyperthyroidism

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In previously published experiments of this series [1] radioactive iodine was used as an indicator in the study of animal and human thyroid physiology and iodine metabolism. Much of this preliminary work was done with a view to the discovery of the conditions under which radioactive iodine might be administered with maximum radiational effect in the pathologic thyroid of patients ill with hyperthyroidism. The present paper is a progress report on our early experiences (1941-1946) with such "internal irradiation" in the treatment of 29 cases of hyperthyroidism. It is, indeed, a three to five year follow-up report on these cases.

PROCEDURE

Patients were selected who had had no previous iodine treatment and who were judged clinically to have hyperthyroidism. The usual clinical tests were made and the patients were presented to the Thyroid Clinic of the Massachusetts General Hospital for discussion and determination of their suitability for this type of treatment. In each instance a dose of radioactive iodine, which had been made by the cyclotron at the Massachusetts Institute of Technology or by the Harvard University cyclotron, and separated chemically as sodium iodide, was then orally administered.

The samples of radioactive iodine used were obtained by deuteron bombardment of tellurium and at the time of administration consisted of a mixture of different radioactive isotopes of iodine. Over 90 per cent of the activity at this time consisted of the 12.6 hour isotope I^{130} and most of the remainder of the 8 day isotope I^{131}. The total activity administered varied between 0.7 and 28 millicuries. In 19 cases the total dose was administered to the individual patients as one dose; in 10 cases divided dosages were employed.

From the data already obtained from tracer studies it was considered desirable to keep the total amount of iodide administered below 2 mg. of iodine in order to insure maximum collection by the thyroid.

Urinary iodine excretion was determined during the first seventy-two hours after the administration of radioiodine. An indirect estimate of the thyroid retention of radioactive iodine was thereby obtained, since an approximate balance exists between administered iodine on the one hand and the sum of thyroid iodine retention and urinary excretion on the other.

Urinary studies were carried out on aliquot portions of carefully collected twenty-four hour specimens, which were kept iced and corked during the collection periods.

It was early found [2] that significant amounts of the original dose were to be found only in the first three days' specimens. Fecal excretion was tested and was found to be so low as to be negligible for the purpose of these experiments.

In a few cases external gamma ray counter measurements were made of the activity of the thyroid of patients following the administration of radioactive iodine. Such measurements are difficult, for obvious reasons, to evaluate quantitatively. However, day to day measurements of this type can give good data on the variation of thyroid iodine content. They were performed in order to follow the loss of iodine from the thyroid following the initial uptake and to evaluate the effect of routine iodinization following the administration of radioactive iodine.

External counter measurements were roughly calibrated against actual direct measurements on the thyroid glands at operation and after chemical separation [2] in 2 patients, previously scheduled for surgery, who received therapeutic amounts of radioactive iodine.

Following the administration of radioactive iodine, routine iodine (nonradioactive) in the usual dosage of saturated solution of potassium iodide 5 minims (0.3 cc.) twice a day was begun at periods varying from one day to several weeks after the radioactive iodine dose.

The basal metabolic rate of the patients treated was tested frequently both before and after the radioactive iodine administration. Basal metabolic levels were taken prior to treatment to establish a measure of the degree of thyrotoxicosis present. In addition to the basal metabolic rate, weights, pulse rates and physical findings were recorded and the total clinical picture was used to evaluate the effects of treatment. No adverse effects, such as fever, nausea or irradiation sickness, were noted in this series of patients. No complaints were recorded regarding the taste of the medicament (since it is tasteless), nor were any local effects, either in the oral cavity or over the thyroid, encountered at the dosage levels used. No increase in the degree of thyrotoxicosis following the radioactive iodine treatment, per se, was recorded, although several test patients were kept uniodinized for three to four weeks prior to routine iodinization.

In most cases, after a period of two to four months following the radio-iodine administration, routine iodine therapy was stopped when an essentially normal basal metabolic rate had been maintained on iodine for a few weeks or months. Such basal metabolic rate response was taken to be indicative of good control of

A report to March 15, 1946.
From the Thyroid Clinic and Metabolism Laboratory of the Massachusetts General Hospital and the Radioactivity Center, Massachusetts Institute of Technology. This material was presented in part to the American Society for Clinical Investigation in May 1942 (see abstract of proceedings, Physiol. Rev. **62:** 4, 1942). The work was aided by a grant from the John and Mary R. Markle Fund in the names of Professors J. H. Means and Robley D. Evans and was accomplished by close cooperation of the Radioactivity Center of the Massachusetts Institute of Technology, Cambridge, Mass., and the members of the medical staff of the Massachusetts General Hospital, Boston.

This work was performed at the Massachusetts General Hospital and the Massachusetts Institute of Technology under a grant from the John and Mary R. Markle Fund. Cooperation and assistance in this work were given by Professor J. H. Means, Professor J. W. Irvine, Dr. Wendell C. Peacock, Professor M. Stanley Livingston, Professor Robley D. Evans, Drs. R. W. Rawson and Jacob Lerman, the technical assistants Mrs. Phyllis Brown Shattuck, Miss Ann Gaurdo and Miss Mary Lennon as well as the nursing, surgical and medical staffs of the Massachusetts General Hospital. The speech of President Karl T. Compton of the Massachusetts Institute of Technology before a Harvard Medical School colloquium in the fall of 1936 served to inspire the senior author in the initiation of this investigative program.

1. Hertz, S.; Roberts, A., and Evans, R. D.: Radioactive Iodine as an Indicator in the Study of Thyroid Physiology, Proc. Soc. Exper. Biol. & Med. **38:** 510 (May) 1938. Hertz, S.; Roberts, A.; Means, J. H., and Evans, R. D.: Radioactive Iodine as an Indicator in Thyroid Physiology: II. Iodine Collection by Normal and Hyperplastic Thyroids in Rabbits, Am. J. Physiol. **128:** 565 (Feb.) 1940; Tr. Am. A. Study Goiter, 1939, p. 260. Hertz, S.: Radioactive Iodine as an Indicator in Thyroid Physiology: III. Observations on Rabbits and on Goiter Patients, Am. J. Roentgenol. **46:** 467 (Oct.) 1941. Hertz, S., and Roberts, A.: Radioactive Iodine as an Indicator in Thyroid Physiology: VI. Application of Radioactive Iodine in Therapy of Graves' Disease, J. Clin. Investigation **21:** 624 (Sept.) 1942. Hertz, Roberts and Salter.[2] Hertz and Roberts.[4]

2. Hertz, S.; Roberts, A., and Salter, W. T.: Radioactive Iodine as an Indicator in Thyroid Physiology: IV. The Metabolism of Iodine in Graves' Disease, J. Clin. Investigation **21:** 25 (Jan.) 1942.

the thyrotoxicosis at that time. Failure of the basal metabolic rate to rise on the cessation of iodine treatment was then interpreted as positive evidence of remission of the disease. A rise of the basal metabolic rate on cessation of iodine therapy was considered evidence of failure of the regimen of internal irradiation. A lowered basal metabolic level, with weight gain, symptomatic relief and lowered pulse, were considered indicative of a decrease of the severity of the disease.

As with other forms of treatment for hyperthyroidism, a prolonged follow-up of six months to one year (or more ideally two to five years) following, clinical evidence of remission was required before classification of cases as "cures."

CALCULATION OF RADIATION DOSAGE

In order to obtain a basis of comparison among patients and between radioactive iodine on the one hand and x-ray therapy on the other, the probable values of radiation dosage delivered in the thyroid were calculated. Such calculations are based on the following data:

1. Fractional uptake of radioactive iodine by the thyroid.
2. The known energy of the radiations from I^{130} and I^{131}.
3. The clinical estimation of the weight of the thyroid of the patient.
4. The known pattern of uptake and retention of radioactive iodine [3] by the hyperplastic thyroid gland of hyperthyroidism.[2]

By using the known values of ionization produced by 1 millicurie of radiation and the properties of I^{130} and I^{131} the following formulas can be derived for the total radiation delivered in decaying to zero:

$$\text{Radiation (in roentgen units)} = \frac{10{,}000 \text{ (dose of } I^{130} \text{ in mc) (fractional uptake in thyroid)}}{\text{weight of thyroid in grams}}$$

For I^{131} the constant 10,000 is replaced by 117,000.

Thus for I^{130} a net collection of 3 millicuries in a 30 Gm. thyroid will give a total of 1,000 roentgens in decaying to zero.[4]

The effectiveness of radiation therapy is known to depend on the rate of delivery, especially at low rates. In the case of I^{130} the initial rate of delivery of a 1,000 roentgen dose is 55 roentgens per hour. For I^{131} it is only 3.6 roentgens per hour. Thus, while in these experiments the total radiations delivered by the two isotopes are comparable, the rate is so much slower for the long-period isotope that its effectiveness is at least open to question. Furthermore, an appreciable fraction of the activity leaves the thyroid during the decay of the long period iodine.[2] We shall assume throughout that it is the I^{130} radiation which is most effective.

Calculations of the type described are subject to large errors. These arise mainly in the estimate of the thyroid weight, in the determination of thyroid iodine uptake and in the assumption of a uniform picture of iodine retention.[2] Errors of 50 per cent or more in the estimate of the thyroid radiation are therefore to be expected.

3. This pattern was determined by the use of tracer quantities of radioactive iodine. It is not strictly correct to assume, as we have, that the pattern will be the same when quantities of activity sufficient to have a biologic irradiation effect on the thyroid are present. However, in the absence of other data we have assumed that the pattern is the same. If this is in error it will introduce another error into the calculation, already admittedly approximate, of the dosage delivered to the thyroid.

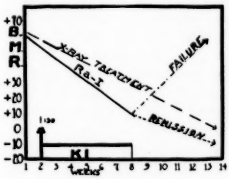
4. The millicurie values of activities cited in this paper are absolute values based on the number of disintegrations occurring in the radioactive substance, determined by methods like those described by Deutsch, M.; Downing, J. R.; Elliott, L. G.; Irvine, J. W., Jr., and Roberts, A.: Physiol. Rev. **62**: 4, 1942.

RESULTS

The accompanying graph is a schematic representation of the expected course of the basal metabolic rate in successfully and unsuccessfully treated cases. The upper broken line represents the course of the basal metabolic rate of a patient treated successfully by means of orthodox external x-ray therapy. The latter is given as a basis for comparison of the time interval required for obtaining a remission by the internal and external forms of thyroid irradiation in typical cases of hyperthyroidism.

The results obtained with 29 patients are summarized in tables 1 and 2. Table 1 affords an analysis of 9 cases in which cure was not obtained by the radiational effect of radio-iodine. Table 2 gives an analysis for 20 cases considered to be cures. These cases are so classified after follow-ups and examinations extending to March 1946.

The excretion studies and the external gamma ray counter measurements showed early in these experiments that there is no peak in the excretion of iodine in any of 14 cases tested, nor is there any sudden drop in the radioactive iodine content of the thyroid when a patient who has been given radioactive iodine is started on routine iodinization. On the contrary, these experiments showed that iodinization either has no effect on the normal slow loss of iodine from the thyroid or tends to "freeze" the radioactive iodine collected by the gland, i. e. to foster its longer retention therein. As much as 25 per cent of the initially collected radioactive iodine may remain in the thyroid twenty-five days after an initial collection and subsequent iodinization.[2] It is clear that such prolonged retention is advantageous from the standpoint of efficient use of the radioactive isotopes administered. Urinary studies in a typical case gave the results recorded in table 3.



Course of the basal metabolic rate in successfully and unsuccessfully treated cases of hyperthyroidism: solid line, treatment by radioactive iodine; upper broken line, treatment by external x-irradiation. The arrow indicates the point at which I^{130} was administered to the patients treated with radioactive iodine. The lower rectangle indicates the administration of ordinary iodides. A rise in the basal metabolic rate on omission of iodide therapy is significant of continued thyrotoxicity and failure of the therapeutic program; the absence of any such rise in any case is interpreted as evidence of remission of the disease as a result of the type of treatment received by the patient.

The reasons for adopting the procedure of full iodinization following the radioactive iodine dose were, in the main concern, that if the radioactive iodine was not effective the patients might be injured by uncontrolled thyrotoxicosis. In addition, no adequate control was possible of the iodine intake of patients (from extraneous sources) while ambulatory and awaiting the radiotherapeutic effect.

In spite of the fact that the interpretation with regard to cure might be rendered slightly less unequivocal with the use of this procedure, one can depend on the familiar fact that routine iodinization, per se, has been known for years to be a rather unsatisfactory sole treatment for the great majority of unselected thyrotoxic patients.[5]

5. Thompson, W. O.: Toxic Goitre: The Present Status of Treatment, Canad. M. A. J. **42**: 224 (March) 1940.

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COMMENT ON RESULTS OF TREATMENT

A total of 29 patients were given radio-iodine in quantities which might be presumed, a priori, to have a therapeutic effect. As might be expected, in the earlier cases the dosage administered was not uniformly effective. At the time of starting these experiments there was no accumulated experience as to the possible adverse general effects of the administration of radioactive isotopes of iodine on the internal human economy. As our experience became extended, the total activity administered was increased from values in the vicinity of 1 millicurie to a maximum of 28 millicuries in 1 case without the occurrence of even temporary immediate reaction. As the series was followed, no clinical evidence has appeared to make us consider that there are any such undesirable effects or dangers in the range of activities used. No case of cancer of the thyroid has occurred; it appears unlikely that any such condition will arise from the internal irradiation involved in this form of treatment at the activity levels used.

Although the error in the estimation of the actual dosage delivered to the thyroid on the basis of the method of estimation used is necessarily large, it is possible, from the clinical behavior of the latter part of our series, to select the region near 1,000 roentgens (of the 12 hour isotope) as the minimum biologically effective range of dosage. In case 2 four separate doses of 1.4, 0.9, 2.4 and 0.8 millicurie were given to a patient with an uniodinized thyroid, with a frank failure of this regimen. The total dose in this case was 5.5 millicuries and the thyroid irradiation 500 roentgens (of 12 hour radio-iodine).

FAILURES

In case 10 (0.7 millicurie), in which operation was performed, the failure of the regimen may be attributed to the use of subminimal doses of radio-iodine. In cases 1, 5, 14, 16 and 19 of table 1 operations were performed following the administration of 3.3, 5.7, 15, 10 and 28 millicuries respectively. These were the only cases in the series in which operations were performed, and in every 1 of these 5 cases postoperative myxedema or hypometabolism ensued. In case 14 the basal metabolic rate was —15 the day before operation; it was essentially normal in the others (on iodides).

The occurrence of postoperative hypometabolism in 100 per cent of patients exhibiting essentially normal basal metabolic rates preoperatively is suggestive of a radiational effect on the thyroid tissue remaining after operation. For example, Mrs. R., patient 5, who was operated on after receiving 5.7 millicuries (1,000 roentgens) in a planned experiment for another purpose, developed myxedema despite the fact that one of us was present to advise the surgeon to leave 6 to 7 Gm. of thyroid (a nonradical subtotal thyroidectomy) in view of the previously demonstrated high radio-iodine uptake by this patient's thyroid. It is reasonable to surmise that hypometabolism might not have ensued in such a large percentage of the patients had they not received the radio-iodine prior to operation.

An analysis of preoperative basal metabolic rates of the patients operated on indicates that all 5 so treated were adequately controlled on iodides at the time of operation despite the long period of observation of these patients in a nonoperated state.

TABLE 1.—*Analysis of Nine Cases of Hyperthyroidism in Which Cure Was Not Effected by Administration of I^{130} with Therapeutic Intent*

Number	Patient	Basal Metabolic Rate Level Prior to I^{130}	Dose of I^{130} and Dates of Administration	Basal Metabolic Rate Prior to Subtotal Thyroidectomy	Postoperative Basal Metabolic Rate	Thyroid Weight, Gm.	Histologic	Total Thyroid Irradiation (Roentgens) 12 Hr. I^{130}	Total Thyroid Irradiation (Roentgens) I^{131} 8 Day	Estimated Thyroid Weight	Percentage of Dose of Radio-Iodine Excreted 72 Hours
1	Elizabeth D.	+30	2.1 mc. 3/31/41 1.3 mc. 4/16/41 3.4 mc.	(—5) (—7)	(—29)	34.5	Involution	470 220	660 240	35	20 28
5	Lillian R.	+35	5.7 mc. 7/16/41	Planned experiment	(—20)	31.8	Hyperplasia, no involution	1,000	1,150	40	27
10	Gladys B.	+55	0.7 mc. 2/?/42	Controlled through pregnancy (+3) (12/30/43)	(—26)	26 30 — 56	Hyperplasia + moderate involution	120	80	60	38
14	Wilfred B.	+50	15 mc. 7/15/42	(—15) (8/17/43) operation (8/18/43)	(—24)	55	Hyperplasia + involution	650	...	60	71 (?)
16	Carmella D.	+25	10 mc. 8/11/42	(—8)	(—24)	28	Involution	1,800	...	45	6
19	Peter C.	+65	15 mc. 8/25/42 8 mc. 3/8/43 5 mc. 3/9/43 28 mc.	(+8) to (+13)	(+36) to (—18)	35	Slight hyperplasia + involution	2,000 (?) 1,500 (?)	...	60	9 15 (?) 7
2	Margaret B.	+35	1.4 mc. 5/10/41 0.9 mc. 41 2.4 mc. 42 0.8 mc. 42 5.6 mc.	Persistent thyrotoxicosis, another radio-iodine dose proposed	.....	Not operated on		160 110 120 100	140 100 120 100	40	54 48 78 ..?
4	Camille Sch.*	+30*	3.6 mc. 7/14/41 2.2 mc. 7/31/41 5.8 mc.	Eyes better, no goiter, basal metabolic rate off all medication	(+2) 4 yrs.	Not operated on		270 170	300 180	60	55 56
3	Ruth M.	+50	3.4 mc. 6/6/41 20 mc. 1/9/46	Remission of one year's duration following hemithyroidectomy (6/25/41) (Recently for true recurrence)				430	410 4,300	45 30 (recurrence)	45 35

* Case classified as special ophthalmopathic type of hyperthyroidism (Low intake of I^{130}).

Eight day isotope figures assume no loss of iodine from thyroid during decay; they are therefore excessive. They were not measured for cases 13-29.

Mrs. M. B., patient 2, has been taken off iodine in preparation for a 20 millicurie dose of radio-iodine. She has remained fairly well, at work, on full iodinization but remains chronically thyrotoxic.

Miss R. M., patient 3, who had 3.4 millicuries, was subjected to hemithyroidectomy in June 1941. She was in remission off iodides for twelve months but during the past one and one-half years developed a definite recurrence of hyperthyroidism, for the treatment could have been by subtotal thyroidectomy, since the probability of recurrence is distinctly higher following pregnancy in the postoperative follow-up of surgically treated cases.

One patient (4, Mrs. C. S.) should, in our opinion, be excluded from the series on the grounds of failure to present a picture of typical toxic diffuse goiter. As our experience developed it became evident [6] that patients in the "special ophthalmopathic group" [7] char-

TABLE 2.—*Analysis of Twenty Cases of Hyperthyroidism Successfully Treated with Therapeutically Sufficient Dosage of I^{130} Followed by Ordinary Iodide Administration*

Number	Patient	Dose of I^{130} and Date of Administration	Basal Metabolic Rate Before I^{130}	Basal Metabolic Rate Level Off Iodides	Time Off Iodides	Thyroid Size, 1946	Estimated Thyroid Weight, Gm.	Percentage of Radio-Iodide Excreted, 72 Hours	Estimated Thyroid Irradiation (Roentgens) 12 Hour	8 Day
6	Michael K.	2.3 mc. 7/24/41 1.7 mc. 7/30/41 4.0 mc.	45+	12/—/42 (— 9) 5/—/43 (—16) 1/—/46 (— 7)	4 yrs.+	N	45	35 22	320 280	390 300
7	Allison D. (aged 9)	1.4 mc. 9/19/41 1.5 mc. 9/21/41 2.9 mc.	65+	1/ 8/46 (— 6)	4 yrs.	N	45	9 20 (?)	260 260 (?)	230 220 (?)
8	Naomi K. (aged 9)	1.5 mc. 9/24/41	30+	7/17/45 (— 3)	Months	Firm 2 × N	40	15	300	250
9	Mildred G.	4.9 mc. 11/26/41	30+	5/ 8/45 (—10)	4 yrs.	N	60	17	650	420
11	Frances H.	5.8 mc. 4/ 9/42	37+	7/ 9/42 (—12) 2/24/44 (+ 9) 2/ 3/46 (—21)	3.5 yrs.	N	60	17	750	380
12	Ferdinand L.	7.5 mc. 5/15/42	55+	45 (+11) 2/ 3/46 (—13)	3 yrs.	Hard 1.5 × N	60-75	26	950	500
13	Dorothy P.	12 mc. 6/ 9/42	30+	3/—/43 (+ 6) 2/ 3/46 (—10)	3 yrs.	N	40	71	750	
15	Mary M.	6 mc. 8/11/42 4 mc. 8/11/42 10 mc.	35+	4/—/45 (— 6) 2/ 3/46 (+ 2)	Months	N	40	10	2,000	
17	George T.	13 mc. 8/13/42	50+	44 (—15) 1/ 6/46 (— 9)	3 yrs.+	N	60 (50-75)	14	1,300	
18	Jeanette G.	10.5 mc. 8/15/42	35+	8/22/44 (+11) 2/16/46 (+ 5)	3 yrs.+	N	30-40	15	2,000	
20	Anne D.	10 mc. 11/14/42	50+	4/ 3/45 (— 1) 2/16/46 (— 5)	2 yrs.+	N	45	20	1,600	
21	Richard T.	14 mc. 11/20/42	+45	1/ 8/46 (—13)	3 yrs.+	N (Dr. H. L. Blumgart)	50	15 (?)	2,000	
22	Esther R.	13 mc. 3/ 9/43	+20	6/30/43 (— 8)	2 yrs.+	"? N" (L. M. D.)	35	33	2,200	
23	Margaret D.	8 mc. 3/15/43 10 mc. 3/16/43 18 mc.	+55	6/ 9/43 (—11) 2/16/46 (— 3)	2 yrs.+	Firm 1.5 × N	75	76 67	500	
24	Jane Anne F.	10.5 mc. 3/26/43 4.5 mc. 3/27/43 15 mc.	+40	12/—/45 (— 5)	2 yrs.+	N (Dr. J. C. Zilhardt)	50	57 (?) 31 (?)	1,000 approximately	
25	Sophie R.	16 mc. 4/ 2/43	+44	9/28/44 (— 7) 4/27/45 (+ 9)	2 yrs.+	N (Dr. J. C. Aub)	50	20.6 63.0	750 approximately	
26	Bessie W.	12 mc. 4/ 6/43	+39	45 (— 8) 1/16/46 (+ 2)	2 yrs.+	N	45	85	350	
27	Winifred K.	13 mc. 4/12/43	+40	7/17/45 (—16) 2/15/46 (—10)	2 yrs.+	N	50	33	1,600	
28	Margaret H.	10.5 mc. 4/13/43 11.0 21.0 mc.	+55	12/—/45 (—15) 2/ 3/46 (+ 6)	2 yrs.+	N	75	.. (?)	2,000 approximately	
29	Julia Laf. Ry.	8 mc. 3/29/43 4 mc. 3/30/43 12 mc.	+30	2/—/46 (+ 5)	2 yrs.+	N	55	10 53 (?)	1,300 250	

Eight day isotope figures assume no loss of iodine from thyroid during decay; they are therefore excessive. They were not measured for cases 12-29.

of which she received 20 millicuries of radio-iodine on Jan. 9, 1946.

In case 10 a temporary control of the disease was achieved, but a true recurrence of the disease following an uneventful pregnancy occurred, for which surgical treatment was given at the United States Naval Dependents' Hospital, Boston. As this patient did not remain "cured" for over a year, she is not included in the series of cures. In comparing her case with others in which routine surgical treatment was administered, she might be considered as at least having been temporarily benefited to the same extent by radio-iodine as she acteristically had lower thyroid uptakes of radioactive iodine than patients with typical hyperthyroidism. Although this patient has done well without operation, her improvement cannot be ascribed to the radioactive iodine treatment. In our experience this group does well on medical therapy in any event [8] and rather poorly

6. Hertz, S., and Roberts, A.: Radioactive Iodine as an Indicator in Thyroid Physiology: V. The Use of Radioactive Iodine in the Differential Diagnosis of Two Types of Graves' Disease, J. Clin. Investigation **21**: 31 (Jan.) 1942.

7. Hertz, S.; Means, J. H., and Williams, R. H.: Graves' Disease with Dissociation of Thyrotoxicosis and Ophthalmopathy, West. J. Surg. **49**: 493 (Sept.) 1941; Tr. Am. A. Study Goiter, 1941.

8. Means, J. H.: The Eye Problems in Graves' Disease, Illinois M. J. **80**: 135 (Aug.) 1941.

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by rapid cure of the thyrotoxic element by operation. It is conceivable, however, that by giving larger dosages of radioactive iodine radiotherapeutic advantage could be obtained even in this class of cases.

In summary, therefore, there were 9 cases which comprise this series of "failures."

In 1 case (10), in which there was a recurrence, the dosage of radio-iodine is known to have been probably inadequate (120 roentgens) for biologic effect. One, patient 4, is grouped in this list because she was a "special ophthalmopathic" patient; the control of her disease cannot be uniquely attributed to the effect of the radio-iodine.

Two patients (3 and 5) had operations as part of planned experiments and gave us the first evidences of possible biologic effect of the radio-iodine which was administered. They are, however, included among the failures because of the complicating factor of operation. Patient 5 developed myxedema; patient 3 suffered a recurrence after hemithyroidectomy.

Five patients (1, 5, 14, 16, 19) were operated on who had received dosages of radio-iodine from which one might expect a cure. All developed postoperative hypometabolism.

Mr. P. C., patient 19, received divided dosage of 15, 8 and 5 millicuries, the largest total dosage in our series. He developed postoperative hypometabolism after a short period of persistent thyrotoxicosis (basal metabolic rate + 36 to — 18). His basal metabolic rate the day prior to operation was + 13.

TABLE 3.—*Urinary Studies*

Radio-iodine (20 mc. of I^{130}) orally administered as a single dose; 37 per cent excreted in a period of four days (I, II, III, IV = twenty-four hours' collections of urine following the radio-iodine).

I. 37.9%, 0.047%/cc./hr.	
II. 3.3%, 0.006%/cc./hr.	
	5 minutes of saturated solution of potassium iodide
III. 3.45%, 0.006%/cc./hr.	
	5 minims of saturated solution of potassium iodide
IV. 2.37%, 0.0001%/cc./hr.	

Finally, patient 2 received a total of 5.5 millicuries of radio-iodine in four divided doses, with a total radiation of 500 roentgens. She has not been operated on but exhibits clear evidence of continued thyrotoxicosis which is only moderately well controlled by iodine.

SUCCESSES

There were a total of 29 cases in this entire series. In 1 case (10) the dosage was subminimal. Of the remaining 28 patients who received radio-iodine of therapeutic intensity, 5 were subtotally thyroidectomized. All 5 developed hypometabolism.

In the remaining 23 cases in which radio-iodine of therapeutic intensity was given, no subtotal thyroidectomy was performed. In 20 of these patients a recent follow-up indicates that they are no longer thyrotoxic. The remaining 3 cases (2, 3 and 4, already discussed) cannot be considered as successes.

The thyroid gland in all but 3 of these patients became normal in size (impalpable). In the 3 patients in whom the thyroid is still palpable, despite general metabolic and clinical cure (off iodine), there were decided reductions in the size of the goiters. They have firm to hard glands which suggest the presence of chronic thyroiditis or fibrosis. These patients had the largest pretreatment goiters. One of them (12) states that his collar size has now returned to the same as he had worn prior to the onset of hyperthyroidism. He had had a large goiter (three times normal size) prior to treatment.

In addition to the 20 cures in which operation was not performed, there is pathologic evidence for cure in 1 case (16) in which operation was performed. A 28 Gm. thyroid was removed; it showed histologic "involution," and myxedema subsequently developed.

There were no mortalities in the series either as a result of thyrotoxicosis or due to operation in the 5 cases. The incidence of myxedema and hypometabolism has been mentioned.

No undesirable complications such as tetany or loss of phonation occurred. No tracheal or laryngeal irritations occurred. No undesirable radiation effects were observed. No anemia ensued in any patient in the series.

Although 5 of the 20 patients not operated on developed basal metabolic levels of — 15 to — 20, no one suffered the development of permanent myxedema at the dosage level employed in this series.

CONCLUSIONS

From these data it is clear that we are now in a fair position to set down a minimum dosage and a preliminary estimation of the therapeutically effective dosage range in typical cases of hyperthyroidism. This range is from 5 millicuries to 25 millicuries (as a single dose), with the choice of the dose largely a function of the clinical estimation of the size of the goiter of the patient being treated.

The calculated dosages administered in those cases (500 to 2,500 roentgens) (± 50 per cent) in which treatment was successful are in satisfactory agreement with the x-ray dosages which have been successfully used (1,000 to 1,200 roentgens). The apparently greater efficacy of the radio-iodine treatment as compared with orthodox x-ray treatment may perhaps be attributed to the fact that x-ray dosages are sometimes limited by the appearance of undesirable skin reactions; and the intraglandular irradiation within the thyroid cells may conceivably offer certain advantages over external irradiation. On the basis of our experience to date, the following are considered to be important clinical considerations in patients who are to be chosen to undergo treatment by radioactive iodine:

1. No previous iodine therapy; or, if previously treated, iodine treatment to be stopped for at least one month to allow maximum uptake of the radioactive iodine dose.[2]
2. Availability for close follow-up.
3. Administration of routine iodinization, starting one to three days after the administration of radio-iodine, as soon as the uptake is known to be adequate.
4. Unwisdom of treating patients having large goiters with secondary involutional changes at this time by this means, as surgery might be needed by them on a purely mechanical basis, even though detoxification by radioactive iodine could be accomplished. Early diagnosis and early treatment of cases would then appear to offer major advantages in this as in many other forms of treatment.

The treatment of the special cases in the ophthalmopathic group of hyperthyroidism appears to offer special problems, as do cases of large, involutional goiters. However, typical cases of hyperthyroidism respond to this form of treatment in such a manner as to make it possible to venture the prediction that this therapeutic program may in time replace the surgical approach currently in vogue.

Radioactive iodine is produced in enormous quantities in nuclear chain-reacting piles. When radio-iodine from such sources is made readily available to the medical

profession, this form of treatment may well prove itself not only highly effective, safe and noninjurious but also cheap and of least inconvenience to the patient who may receive it while continuing at his normal pursuits. After a short period of hospitalization for the usual preliminary clinical studies and the administration of radio-iodine, the patient may be fully iodinized and released, to be followed as an ambulatory case.

SUMMARY

On the basis of a series of animal and clinical experiments using radioactive isotopes of iodine as a tracer in the study of thyroid physiology and iodine metabolism, the treatment of 29 cases of hyperthyroidism with internal irradiation by radioactive iodine was instituted. By careful excretion studies, external counter measurements over the thyroid gland and by planned operations in 2 cases, data were obtained which allow us to construct a formula for a procedure in treatment.

The addition of ordinary iodine therapy after the administration of radio-iodine offers many advantages in the clinical care of these patients and in the economy and safety of the procedure.

By an analysis, over a long period, of both the failures and successes in this series of 29 cases, it is shown that radioactive iodine when given in the dosage range of 5 to 25 millicuries to uniodinized patients with hyperthyroidism possessing goiters of 60 to 75 Gm. is highly effective as a cure of the disease in about 80 per cent of cases. When appreciable activity has been administered and subtotal thyroidectomy is resorted to, myxedema or hypometabolism may be expected to develop in a large fraction of the cases (100 per cent in 5 cases in this series).

THE TREATMENT OF HYPERTHYROIDISM WITH RADIOACTIVE IODINE

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Roentgen treatment has been used for hyperthyroidism for many years. In 1923 Means and Holmes [1] pointed out that in this form of treatment about one third of the patients are cured, another third improved and another third not affected. Since 1923 ordinary iodine by mouth has been used as a preoperative method of quieting the hyperactive thyroid in preparation for surgery. Under iodine alone occasionally the patient and the doctor have been agreeably surprised to find that the symptoms and signs of hyperthyroidism disappeared, and a permanent remission apparently was effected. That x-ray treatment and iodine treatment sometimes cure hyperthyroidism led to the hope that some day a more effective, nonsurgical agent would be found. Then the MacKenzies [2] and Astwood [3] discovered that several chemical compounds inhibit the function of the thyroid in hyperthyroidism as well as under other circumstances. Several of these agents have been investigated, and until now thiouracil has been found to be most useful in the treatment of thyrotoxicosis.

Induced radioactivity was discovered in 1934, and that same year Fermi and his co-workers [4] in Italy prepared radioactive isotopes of iodine. Because the thyroid absorbs iodine selectively, it seemed likely that beta rays from iodine rendered radioactive would have a greater radiation effect than that derived from roentgen rays delivered through the skin and overlying tissues.

The use of radioactive iodine in the study of thyroid physiology was soon undertaken and reported first in 1938 by Hertz, Roberts and Evans.[5] Subsequently these and other investigators used various isotopes of radioactive iodine as tracers for the study of thyroid function [6] and it was found that in untreated hyperthyroidism the thyroid may take up as much as 80 per cent of a small dose (less than 2 mg.) of iodide within a few hours after oral administration.[7] This established the basis for therapeutic trials of radioactive iodine, and in 1942 Hertz and Roberts [8] published a preliminary report of the treatment in this manner of 10 patients. In this series the procedure was to give the radioactive iodine and follow this with ordinary iodine by mouth for a period of several months. However, our review in the clinic of these 10 cases of Hertz and Roberts, and an additional 18 so treated under the direction of Hertz, has led to the conclusion that it is difficult to decide whether those patients who improved were responding to the ordinary iodine, to the radioactive iodine or to their combination. The dosage of radioactive iodine given to these 28 patients averaged 5 millicuries in 1941, 10 millicuries in 1942 and 14.5 millicuries in 1943, the largest single dose being 21 millicuries. In April 1943 Dr. Hertz went on active duty in the Navy and asked us to continue with this study. The present report is on a series of 22 patients with hyperthyroidism treated only with radioactive iodine and with considerably higher doses. Although both Hertz and Roberts [8] and Hamilton and Lawrence [9] were encouraged by their therapeutic trials, the details of their findings have not yet been published.

METHODS AND DOSAGE

Selection and Care of Patients

The patients selected in the Thyroid Clinic of the Massachusetts General Hospital for radioactive iodine therapy were judged by several physicians to be thyrotoxic on the basis of classic disease pattern accompanied with constantly elevated basal metabolic rates. All patients had thyroids estimated to be at least two to three times normal in size. All but 3 were kept free from all forms of treatment, especially iodine, for at least four weeks prior to giving radioactive iodine. For the administration of the drug they were usually hospitalized for a time adequate to obtain levels of their basal metabolic rate, then given radioactive iodine by mouth—simply a drink of what tastes like rather stale water.

Aided in part by a grant from the John and Mary R. Markle Foundation.

From the Thyroid Clinic of the Massachusetts General Hospital (Dr. Chapman) and the Radioactivity Center of the Department of Physics of the Massachusetts Institute of Technology (Dr. Evans).

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9. Hamilton, J. G., and Lawrence, J. H.: Recent Clinical Developments in the Therapeutic Application of Radio-Phosphorus and Radio-Iodine, J. Clin. Investigation **21**: 624 (Sept.) 1942.

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The urine was then collected for a period of three days to measure the urinary excretion of radioactive iodine.

Preparation of Radioactive Iodine

The radioactive iodine is prepared by the nuclear bombardment of metallic tellurium, in the Massachusetts Institute of Technology cyclotron, using 14 MEV (million electron volts) deuterons. This bombardment transmutes tellurium into iodine. The principal isotopes produced in this way are I^{130} (half period 12.6 hours) and I^{131} (half period 8.0 days). Immediately after a short bombardment the 12-hour iodine has about ten times the radioactivity of the 8-day iodine isotope which is produced simultaneously. The ratio of 12-hour to 8-day iodine decreases with increasingly long bombardments. For the preparation of therapeutic radioactive sources the bombardments were usually about three to ten hours in duration.

Following the bombardment, the radioactive iodine is separated [10] from the target. To the metallic tellurium is added 0.5 mg. of iodine as potassium iodide and 25 cc. of 3 molar sulfuric acid. Then concentrated nitric acid is added dropwise while the solution is heated. This dissolves the target and causes the iodine to distil over as elementary iodine, which is collected in carbon tetrachloride. The carbon tetrachloride solution is washed once with water in a separatory funnel and then the iodine is reduced with sodium bisulfite and is extracted in an aqueous layer as sodium iodide. This aqueous solution is filtered to remove any residual droplets of carbon tetrachloride.

The final solution presented to the patient is distilled water containing 14 to 79 millicuries [11] of 12-hour iodine and about one-tenth that amount of 8-day iodine in 0.5 mg. of iodine as sodium iodide. Because of the rapid decay of the 12-hour isotope, which is the more important radiation source, all preparations were administered to the patients within one to four hours after the conclusion of the bombardment. The doses in table 2 are in terms of the radioactivity of the 12-hour isotope at the time of administration.

Tissue Radiation Doses

In the therapeutic use of x-rays, the radiation doses are commonly reported in roentgens. The x-rays produce high-speed secondary electrons in the tissue, and the therapeutic effect of x-rays is actually due to the interaction of these secondary electrons with the tissues. The beta rays from a radioactive isotope are also high-speed electrons. These beta rays can therefore be expected to produce tissue effects similar to those produced by x-rays, and the radiation dosages can also be expressed in roentgen units. The beta rays have a maximum range of only a few millimeters of tissue. Therefore the radiation doses are confined almost exclusively to the tissue actually containing the radioactive isotope and are proportional to the concentration of the isotope in the tissue.

The tissue radiation dose may be predicted quantitatively for an average patient in terms of the number of millicuries of 12-hour iodine administered per estimated gram of thyroid tissue. Patients may show wide variations from this estimated average tissue radiation dose, especially because of individual variations in the retention of radioactive iodine. It is assumed that substantially all the administered iodine is either taken up by the thyroid gland or excreted in the urine. A high urinary excretion of radioactive iodine indicates a correspondingly low retention of iodine by the thyroid, with a consequent reduction in the radiation dose available to the gland.

The tissue radiation dose delivered to the thyroid gland can be estimated from the shape of the iodine retention curve,[7] the measured fractional urinary excretion of radioactive iodine, the radioactive decay curve of the two isotopes involved and the roentgen equivalent [12] of the energy of the radiation from the two isotopes.

A concentration of 1 mc. (3.7×10^7 disintegrations per second) of 12-hour iodine per gram of thyroid tissue delivers 12.3 roentgens per minute. If 0.1 mc. of 8-day iodine is also present per gram of tissue this will add 0.85 roentgen per minute.

As an illustration, we shall estimate the radiation delivered to the thyroid by the 14 millicurie dose given to patient 1. Urinary excretion measurements showed that this patient excreted about 25 per cent of the dose in three days. This patient received 14 mc. of 12-hour iodine and about one tenth as much 8-day iodine. The thyroid was estimated to weigh 40 Gm. If all the

TABLE 1.—*Estimation of Roentgen Tissue Dose Due to 12-Hour Radioactive Iodine*

Assumes a maximum of 80 per cent uptake of a dose of 0.35 millicuries per gram of thyroid.

Time Interval, t_1 and t_2	Fraction of Administered Iodine Retained in Gland (7), R	Fraction of Original 12-Hour Radioactivity Remaining: At Beginning of Time Interval, F_1	Fraction of Original 12-Hour Radioactivity Remaining: At End of Time Interval, F_2	$F_1 - F_2$	Dose in Interval, $D = 4680R(F_1 - F_2)$	Total Dose in Tissue, Roentgens Due to 12-Hour Iodine
0 - 12 hr.	0.80	1.00	0.52	0.48	1,780	1,780
12 - 24 hr.	0.80	0.52	0.27	0.25	940	2,720
24 - 36 hr.	0.73	0.27	0.14	0.13	440	3,160
36 - 48 hr.	0.54	0.14	0.073	0.07	180	3,340
48 - 60 hr.	0.48	0.073	0.038	0.035	80	3,420
60 - 72 hr.	0.43	0.038	0.020	0.018	37	3,457
72 - 84 hr.	0.41	0.020	0.010	0.010	19	3,476
84 - 96 hr.	0.39	0.010	0.0053	0.0053	9	3,485
96 - 108 hr.	0.38	0.0053	0.0028	0.0027	5	3,490
108-120 hr.	0.37	0.0028	0.0014	0.0014	2	3,492

administered iodine should be concentrated in the thyroid ($R = 1.00$) the initial dosage rate A_o would be 12.3 (14/40) = 4.30 roentgens per minute from the 12-hour iodine plus 0.85 (14/40) = 0.30 roentgen per minute from the associated 8-day isotope.

The constant coefficient of the equation [13] for determining the total roentgen ray dosage due to the 12-hour isotope is $1.44\ TA_o = 1.44 \times 12.6 \times 60 \times 4.30 = 4{,}680$ roentgens. The dosages delivered in each 12-hour interval are given in the last column of table 1. It will be noted that 50 per cent of the total radiation dose from the 12-hour isotope is delivered in the first twelve hours, and 90 per cent is delivered within the first thirty-six hours after administration. The tissue dose per hour is mainly due to the 12-hour isotope for the first 2.5 days. Thereafter the 8-day isotope adds approximately 2 per cent each day to the total radiation previously delivered by the 12-hour isotope.

In the previously treated patients [8] the use of low doses, below 10 mc., was thought by us to explain the lack of improvement in several patients, so it was decided to increase greatly the dose and if possible to

10. Professor John W. Irvine Jr. and Mrs. Elizabeth Pattison carried out these radiochemical procedures.

11. A millicurie is 37,000,000 atoms disintegrating per second.

12. Hertz, S.; Roberts, A.; Means, J. H., and Evans, R. D.: Radioactive Iodine as an Indicator in Thyroid Physiology: II. Iodine Collection by Normal and Hyperplastic Thyroids in Rabbits, Tr. Am. A. Study Goiter, 1939, p. 260.

13. See full paper, available in reprint form.

TABLE 2.—*Summary of 22 Cases of Hyperthyroidism Treated Only With Radioactive Iodine*

	Before Treatment					Treatment: Radioactive Iodine					Response to Treatment: Last Examination			
Case	Age	Sex	Thyroid Size, Estimated in Grams and X Normal	Basal Metabolic Rate Level	Weight, Kg.	Dose, mc.	Date	Excretion † % in 3 Days * in 2 Days	Estimated, mc./Gm.	Interval to Normal Basal Metabolic Rate	Basal Metabolic Rate; Date	Weight, Kg.	Size of Thyroid	Comment
1. E. W.	49	♂	40 2x 20 1x	+36	58	14 mc. 21 mc.	5/18/43 9/24/43	25% 100%	0.35 1.00	2 mos.	+8 2/5/46	67	1 x	See details in case report
2. M. M.	38	♀ Negro	120 6x 120 70 3x	+55	47	15 mc. 53 mc. 79 mc.	6/ 2/43 8/17/43 9/29/43	.... 33% 49%	0.12 0.44 1.12	See fig. 1	+12 2/21/46	57	....	See details in case report
3. A. M.	34	♂	40 2x	+26	67	18 mc.	8/24/43	....	0.45	6 wks.	−10 1/15/46	68	1 x	X-ray treatment in February 1943 while on Iodine; no response; by October 1943 in myxedema, same through 1944-1945
4. B. O'L.	52	♀	65 3x	+47	57	18 mc. 22 mc. 20 mc.	8/24/43 9/ 7/43 9/21/43	.... 11% 10%	0.27	4 mos.	+7 12/15/45	60	1 x	B. M. R. normal by December 1943; remained well through 1944 and 1945
5. H. S.	50	♀	30 2x	+30	41	20 mc. 27 mc.	8/24/43 11/ 9/43	.... 62%	0.66	6 wks.	−5 9/18/45	50	1 x	Subtotal thyroidectomy 1930; recurrence 1943; B. M. R. normal 11/9/43; gained 10 Kg. 1 year; well through 1945
6. F. B.	55	♂	55 3x	+46	66	30 mc. 25 mc. 54 mc.	12/ 2/43 12/16/43 7/ 5/44	16% 54% 87%	0.54	4 wks. 4 wks.	+26	.. 75	... 1 x	Very toxic with auricular fibrillation; bruit disappeared 6 days after first treatment; B. M. R. normal 12/28/43; later had duodenal ulcer and back strain; 2/12/46 blood cholesterol 269 mg., serum iodine 4.9 micrograms
7. A. S.	28	♀	60 3x	+28	61	30 mc.	12/28/43	....	0.50	4 wks.	+5	65	1 x	B. M. R. −10 by 1/25/44; last seen 4/3/45
8. L. S.	42	♂	60 3x	+44	56	43 mc.	1/19/44	18%	0.71	3 mos.	+1 11/6/45	66	1 x	See details in case report and chart 2
9. L. Z.	36	♀	50 2½x	+27	48	37 mc.	2/11/44	26%	0.74	4 wks.	+28 10/9/45	47	1 x	Acute streptococcic tonsillitis 3 days after dose
10. L. J.	33	♀	40 2x	+22	44	23 mc.	3/11/44	81%	0.57	2 mos.	+6 1/29/46	45	1½ x left lobe	Subtotal thyroidectomy 1939; recurrence 1943; thyroid mass larger after dose; B. M. R. −3 May 1944
11. J. B. I.	50	♂	60 3x 40 2x	+63	69	38 mc. 25 mc. 48 mc.	5/23/44 7/ 8/44 8/ 3/45	22% 38% 74%	0.63 1.29	3 mos.	+11 1/15/46	69	1 x	Biopsy of thyroid while toxic, 5/20/44: biopsy of thyroid before third dose showed fibrosis but no sign of cancer
12. H. R.	37	♀	40 2x	+40	49	27 mc.	8/ 4/44	....	0.54	1 mo.	−18 11/6/45	56	1 x	Allergic person; well in 4 weeks and in myxedema 3 months after dose; see details in case report and chart 3
13. A. J.	35	♀	60 3x	+50	57	24 mc. 29 mc. 54 mc.	8/26/44 8/28/44 10/27/44	....	0.4 0.8	.....	+26 10/9/45	73	1 x	Observed one month on bed rest without treatment; improved by November 1944; thyroid normal through 1945
14. H. D.	33	♀	30 2x	+28	69	36 mc.	11/ 3/44	17%	1.20	2 mos.	0 1/29/46	72	1 x	Subtotal thyroidectomy 1933; nausea, vomiting and swollen thyroid after dose
15. J. S.	40	♀	40 2x	+26	56	45 mc.	12/ 5/44	86%*	1.12	3 wks.	−23 12/18/45	67	1½ x	Subtotal thyroidectomy in 1941; recurrence in 1944; rapid response after dose; well through 1945
16. M. R.	37	♀	60 3x	+36	60	52 mc.	12/ 8/44	34%*	1.00	2 wks.	− 8 4/16/46	70	1 x	See details in case report and chart 4
17. K. W.	63	♀	40 2x	+25	..	40 mc.	12/13/44	61%*	1.00	2 mos.	−1 7/10/45	..	1 x	Subtotal thyroidectomy 1937; x-ray treatment 1943 while on Iodine; gradual response
18. J. P. M.	43	♀	45 2½x	+40	72	36 mc.	12/28/44	Acute pyelitis	0.80	6 wks.	−13 2/5/46	90	1 x	No response to thiouracil and other treatments; severe ophthalmopathy lessened gradually
19. M. W	51	♂	60 3x	+50	56	43 mc.	1/10/45	23%*	0.71	2 mos.	−7 1/22/46	64	1 x	Obvious response in 10 days; gained 9.7 Kg. in 3 months after dose; radiation sickness
20. H. O.	49	♂	60 3x	+52	72	45 mc. 40 mc.	2/15/45 4/13/45	9% 100%	0.75	4 mos.	+1 12/17/45	78	1 x	Member of goitrous family; sensitive to Iodine; severe radiation sickness; effect probably from first dose only
21. M. B. L.	34	♀	60 3x	+32	61	49 mc.	3/ 2/45	41%	0.70	5 mos.	−13 1/22/46	63	1 x	Long course of medical treatment; moderate exophthalmos; gradual response in 5 months
22. J. J. B.	30	♂	60 3x	+54	61	44 mc.	3/ 9/45	21%	0.73	6 wks.	+11 2/5/46	72	2½ x	House staff views with skepticism; dramatic response in 4 to 6 weeks

* Percentage in two days.
† Dr. Wendell C. Peacock made these determinations.

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discover the amount needed to produce total thyroid inactivity (myxedema). With this in mind the first doses were usually less than 0.5 mc. per estimated gram of thyroid tissue. Later these were increased to between 0.5 and 1.0 mc. of 12-hour iodine per estimated gram of thyroid tissue. The average total dose per patient became 40 to 50 mc. and the largest single dose given has been 79 mc., which was about 0.8 mc. per estimated gram of thyroid tissue.

REPORT OF CASES [14]

CASE 1.—E. W., a man aged 49, a railroad agent who had been thyrotoxic since 1928, had 120 Gm. of thyroid removed in the Massachusetts General Hospital in 1930 after an iodine preparation; the postoperative course was stormy because of pulmonary collapse and edema. Through 1931, 1932 and 1933 he was moderately toxic despite taking iodine, as Lugol's solution, at least 10 drops daily. In June and August 1933 he was given roentgen therapy with a daily dose of 200 roentgens measured in air over a 10 cm. square field to alternating sides of the neck. A total of 800 roentgens was given to each side of the neck in eleven days. The voltage used was 200 kilovolts and the filter used was 0.5 mm. of copper and 4.0 mm. of aluminum. On three subsequent days he received another 800 roentgens to the posterior part of the neck. The target skin distance was 50 cm. Although the mass of tissue decreased in size, there was little decrease in his hyperthyroidism. He was not seen again in our clinic for ten years, and then in the spring of 1943 he returned, obviously toxic. He said that in 1941 he had been in a veterans' hospital but refused operation. On May 11, 1943 the basal metabolic rate was plus 36 and it was estimated that he had 40 Gm. of recurrent thyroid tissue. The eye signs were moderate. On May 18 he took 14 mc. of radioactive iodine and excreted in successive twenty-four hour intervals 14, 8, 2 and 1 per cent for a total of 25 per cent in four days. After an initial rise to plus 50 on June 1, the basal metabolic rate declined steadily to minus 12 by July 17. On August 21 the basal metabolic rate was plus 7 and the patient was delighted with the results of treatment. He had gained weight, the pulse was slower, the diarrhea had stopped, the eyes were almost normal in appearance and the thyroid was definitely smaller; in fact, it was difficult to feel any tissue. On September 24 a second dose of 20 mc. was given. This time at least 95 per cent of the dose was excreted in the urine in the three day period, suggesting that his thyroid handled iodine like a normal gland.[5] Owing to the small retention of radioactive iodine by the gland, this second radiation dose was unimportant. Throughout the remainder of 1943 he considered himself well and had normal basal metabolic rates. In 1944 he was so well that he came to the clinic only twice for tests. On Feb. 5, 1946 he was working regularly as a freight agent and had a basal metabolic rate of plus 8 after driving in 18 miles for the test. There were no signs of toxicity, and no thyroid tissue was felt.

CASE 2.—M. M., a Negro woman aged 38, had a huge symmetrical goiter with a bruit, definite exophthalmos and other signs of severe toxicity. In 1934 she had been operated on at the Peter Bent Brigham Hospital for multiple nontoxic adenomas of the thyroid. Thereafter she was well until 1939. From then through 1942 the signs of toxicity gradually developed, but no goiter was noticed by her. By February 1943 eye signs were first noted by the patient and her doctor. In March she was given six diathermy treatments to her neck, and immediately after this her neck swelled until a large goiter could be recognized at a distance. When first seen by us it was estimated to weigh 120 Gm. She had a basal metabolic level of plus 50 and on June 2, 1943 she received the first dose of 15 mc. After an increase in the basal metabolic rate to plus 65 the rate fell to plus 20 by June 28. By August 15 the metabolic rate was still elevated and she had shown little response, so she was given a second dose of 53 mc. on August 17. Thereafter she was nauseated for twenty-four hours. She excreted in successive twenty-four hour intervals 13, 14 and 8 per cent, or a total of 35 per cent. The basal metabolic rate dropped to minus 14 by August 31. She seemed better, and the gland decreased in size. However, in the month of September the metabolic rate went up and she was obviously toxic. A third dose of 79 mc. was given on September 29. Nausea and also fever upset the patient, but she recovered in three days and began to improve. In successive twenty-four hour intervals she excreted 27, 18 and 4 per cent for a total of 49 per cent in three days. By November the basal metabolic rate had dropped to minus 13 and she showed clinical evidence of the improvement by a gain in strength and weight and a decrease in the size of the goiter, which had become much firmer—almost hard—and estimated to weigh 45 Gm.

Throughout 1944 (chart 1) the patient continued to have normal or low metabolic rates, but the goiter persisted as a hard mass two to three times normal size and definite eye signs persisted. Despite the low basal metabolic rates she was judged to be in active disease. She was alternating at a job with her goiterous sister when seen on Jan. 9, 1945. The goiter was just visible, and a 2 cm. nodule had developed in the upper right lobe. She was then judged to be nontoxic,

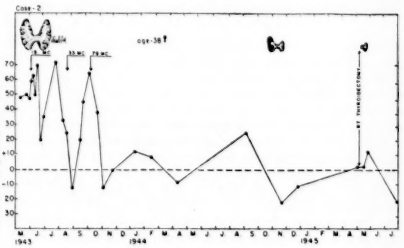

Chart 1.—Course of patient 2, who received three doses of radioactive iodine.

with pulse rate 60 and weight 53.9 Kg., a total gain of 6.9 Kg. Removal of the right lobe with the nodule was advised and on May 17 she entered the metabolic study wards and first had a tracer dose of 8-day (I^{131}) iodine and excreted 37 per cent and 4 per cent in two successive twenty-four hour intervals.

On May 19, without specific antithyroid medication, Dr. Robert Linton removed the right lobe. The operation was difficult because of fibrous adhesions and scar tissue. Histologic section of this tissue showed a background of dense fibrosis with islands of small follicles lined with cells of increased height and containing little colloid. Giant nuclei were present. The patient made a rapid recovery and left the hospital on the fifth day after operation. On subsequent visits to the clinic she has considered herself well. The basal metabolic rate on Feb. 21, 1946 was plus 12, and she seemed normal.

CASE 8.—L. S., a man aged 42, a taxi driver, entered the hospital Jan. 5, 1944 with classic symptoms and signs of moderately severe hyperthyroidism of six months duration. The thyroid was symmetrically enlarged to three times normal, and there was a large bruit. The eye signs were minimal. The basal metabolic rates were plus 44 to 52. On January 19 he drank 48 cc. of a solution containing 43 mc. and that evening experienced nausea and the following day fever to 102 F. (oral). With this upset he said that the thyroid increased in size. By January 21 he was much better and the temperature returned to normal. Excretion of radioactivity in the first day was 6 per cent, second day 7 per cent, third day 3 per cent and fourth day 2 per cent, a total of 18 per cent.

14. A summary of the 22 cases is given in table 2. Space does not permit the inclusion of histories of all 22 cases in THE JOURNAL. Histories of all cases, however, will appear in the reprints. The following 5 cases have been selected as illustrating significant points in the treatment of hyperthyroidism with high dosage of radioactive iodine: Case 1. The first case treated in this series. Case 2. A huge goiter that required three doses of radioactive iodine. A hard nodule developed that was removed and proved to show fibrosis. Case 8. Response to a single dose of radioactive iodine, followed by a return to a euthyoid state. Case 12, in which clinical myxedema developed and persisted for over a year. Case 16, in which sensitiveness to both thiouracil and iodine was shown, with good response later to radioactive iodine.

The response of this patient (chart 2) has been very good and at the visit on Nov. 11, 1945 his basal metabolic rate was plus 1.

CASE 12.—H. R., a woman aged 37, a housewife, was admitted to the wards on July 21, 1944 with moderate hyperthyroidism, moderate eye signs and a thyroid that was symmetrically enlarged to two and one-half times normal. A bruit was present. The basal metabolic rate ranged from plus 30 to 40. Fortu-

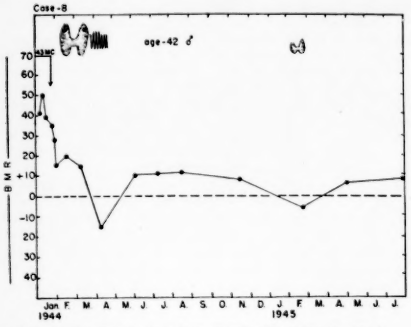

Chart 2.—Response to single dose of radioactive iodine in case 8.

nately only one dose of 5 drops of saturated solution of potassium iodide was given on July 28, so on the 4th of August 27 mc. of radioactive iodine was given by mouth. The patient improved rapidly and by September 5 the thyroid seemed normal, the eyes were normal and the metabolic rates were normal. Through the autumn she gradually felt cold and sluggish, and by November 28 the basal metabolic rate was minus 20 and she was in a state of moderate myxedema. No treatment for this was given, but continued observations confirmed this opinion. By Feb. 6, 1945 she had gained 8.6 Kg. and suffered from the cold. Through 1945 she continued to feel sluggish and tired easily, and the basal metabolic rate continued low and the thyroid was not palpable. Chart 3 depicts her course. She has not taken thyroid.

CASE 16.—M. R., a woman aged 37, a housewife, was referred to us by Dr. R. H. Williams of the Boston City Hospital. Her favorable response to thiouracil had previously been reported (Williams and Bissell,[15] case 5) but in July and again in November 1944 she developed acute febrile, toxic reactions to thiouracil and thiourea, so another form of treatment became necessary. Five drops of saturated solution of potassium iodide twice daily was tried, but this caused an extensive dermatitis with fever, a reaction that lasted about a week.

When first seen by us on Dec. 5, 1944 she was in active thyrotoxicosis with the basal metabolic rate plus 36 and a diffusely enlarged thyroid without a bruit. The eyes showed lid edema, slight exophthalmos and lid lag. The gland was estimated to be three times normal size (45-60 Gm.). December 8 she swallowed 52 mc. of radioactive iodine. That night she vomited and noted pressure in the neck. Excretion for zero to twenty-four hours was 28 per cent and from twenty-four to forty-eight hours 6 per cent, totaling 34 per cent. On December 19 the basal metabolic rate was minus 2 and she felt much better. Subsequently she showed a weight gain and a decline into a myxedematous state, but without medication she returned to low normal basal metabolic rates. The thyroid was not palpable. Chart 4 best depicts her course.

COMMENT

These 22 cases represent our three years' experience in treating hyperthyroidism only with large doses of radioactive iodine. If we try to summarize the results we can say that, as with other methods of treatment, there are good results, surprising effects and some poor results and disappointments. Obviously such a small group does not lend itself to statistical analysis. Of the 22 patients who originally had goiters at least two to three times the size of a normal thyroid, 21 (all except patient 2) now have no goiter, or a thyroid that is just palpable. We can point out that, of 12 patients treated before Aug. 15, 1944, 11 are well and show no signs of toxic goiter; the 12th, patient 9, continues mildly thyrotoxic. Patient 2 originally had a huge goiter and developed a hard, nodular right lobe that was removed by hemithyroidectomy. The histologic appearance of this gland was of fibrosis engulfing scattered acini with high columnar cells. No evidence of malignant disease was seen. The reduction in the amount of hyperplastic tissue seems to explain the response to treatment. However, the remaining thyroid follicles appear to be hyperplastic, so that it seems reasonable to conclude that radioactive iodine does not affect the original stimulus causing hyperthyroidism but acts only to destroy the overfunctioning parenchyma.

The basal metabolic curves of 14 patients who received a single dose of radioactive iodine are recorded graphically in chart 5. The rate of response is in reasonable relation to the probable loss of previously formed thyroxin. Our composite curves may be compared to the iodine-response curve [16] and the thiouracil-response curve,[17] both of which have been interpreted as thyroxin-decay curves. The average length of time for the complete response to the radioactive iodine treatment was about seven to eight weeks, which is longer than the time required for the response to iodine or thiouracil.

Of the 10 patients treated since Aug. 15, 1944,[18] all have made a good response to treatment, although the basal metabolic rate of patient 13 has continued above normal, but the patient has no goiter and insists that she is well. By a response to treatment we mean that the patients have felt better, gained weight and had an

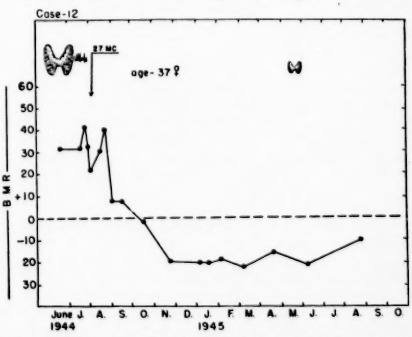

Chart 3.—Course of patient 12, who swallowed a single dose of radioactive iodine and has subsequently continued in myxedema.

appreciable decrease in the size of the goiter, a persistent fall in their basal metabolic rate and a diminution in their eye signs. Improvement of the eyes has been

15. Williams, R. H., and Bissell, G. W.: Thiouracil in the Treatment of Thyrotoxicosis, New England J. Med. **229**: 97 (July 15) 1943.

16. Means, J. H., and Lerman, J.: The Curves of Thyroxine Decay in Myxedema and of Iodine Response in Thyrotoxicosis: Their Similarity and Its Possible Significance, Ann. Int. Med. **12**: 811 (Dec.) 1938.

17. Rawson, R. W.; Evans, R. D.; Means, J. H.; Peacock, W. C.; Lerman, J., and Cortell, R. E.: The Action of Thiouracil on the Thyroid Gland in Graves' Disease, J. Clin. Endocrinol. **4**: 1 (Jan.) 1944.

18. Twenty-five additional cases in which there has been response to treatment since March 1945 are not included in this report as the follow-up period has been too short.

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least of all these responses. Of the 22 patients treated there was only 1 who had severe ophthalmopathy, and we believe that this decreased after the treatment with radioactive iodine. Another index of a favorable response has been the observations on the blood lipid fractions before and after treatment. Dr. F. F. Foldes [19] made these determinations in 3 cases, in all of which the plasma lipid values increased after treatment, parallel with the clinical improvement.

It is of note that 7 of our 22 patients (1, 2, 5, 10, 14, 15 and 17) had been previously operated on for

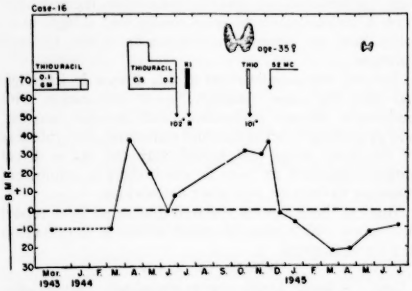

Chart 4.—Response of patient 16, a woman who became sensitive to thiouracil and iodine and has responded to a single dose of radioactive iodine.

hyperthyroidism and these 7 have responded very well to radioactive iodine treatment. Three (1, 3 and 17) of the 22 had received previous roentgen treatment by the usual external application without halting the disorder and yet in each a good result has been obtained with radioactive iodine. One patient, sensitive to both thiouracil and iodine, has had a good response and developed mild myxedema. Eight (2, 4, 5, 6, 7, 9, 11 and 13) of the 22 patients had not previously taken iodine; of these 8 patients 3 (2, 11 and 13) had the largest goiters in the entire group and required three doses at intervals of several months to control their thyrotoxicosis. The response to this form of radiation seems roughly in inverse proportion to the amount of tissue causing thyrotoxicosis. The larger goiters did not respond as quickly as the smaller.

The absence of ordinary iodine and yet the adequate response to radioactive iodine support our belief that ordinary iodine by mouth is not needed in conjunction with radioactive iodine therapy. However, it seems advisable to withhold ordinary iodine for several weeks before administering radioactive iodine in order to assure maximum uptake by the thyroid of the radioactive iodine. The lack of iodine in the gland may be a condition that favors a better response to radiation; possibly this links with the good effects seen from external roentgen treatment in the period before 1924, when iodine treatment became popular. We have as yet no comparative experiments demonstrating whether or not ordinary iodine started a few days after the radioactive iodine will hasten the response. Such a series is now under observation.

In 4 instances (cases 3, 12, 15 and 16) hypothyroidism, or evident myxedema, was produced. Although none of these 4 were treated with thyroid, 2 gradually returned to low normal basal metabolic rates. The approximate dosage of 1 millicurie per estimated gram of tissue in these 4 cases seems to be high, and yet we have tried this dosage in others without producing myxedema. The individual variation in absorption and excretion makes the matter of dosage selection uncertain.

Toxic reactions to large doses of radioactive iodine are very much like acute roentgen ray sickness. Nausea, vomiting, malaise and even slight increase in gland size and fever occurred and lasted two days at the most; the doses were 48 mc. or more in 4 of the 6 patients having radiation sickness. No subsequent ill effects or leukopenia have been observed. Malignant changes were not observed in the tissue removed in 2 cases, 1 as long as two years after this form of radiation.

SUMMARY AND CONCLUSION

1. In hyperthyroidism orally administered doses of radioactive iodine, carried in about 1 mg. or less of ordinary iodine, are concentrated largely in the thyroid gland. The beta rays from the radioactive iodine deliver within the thyroid an internal radiation which is physically similar to roentgen radiation. The radiation dose in a patient who swallowed 14 millicuries has been calculated as equivalent to approximately 3,490 roentgens, due to the 12-hour isotope.

2. Between May 1943 and March 1945, 22 patients having hyperthyroidism were treated with large doses of radioactive iodine. No other form of therapy was given.

3. Fourteen patients responded well to a single dose of radioactive iodine; 3 were given two doses and 5 were given three doses. Myxedema has followed this treatment in 4 patients. Two patients after treatment with this agent, though improved, still have mild hyperthyroidism.

4. Reactions which resembled roentgen ray sickness were observed in 6 patients following large doses of radioactive iodine. Fibrosis of the thyroid has been observed in biopsy of 2 patients after treatment.

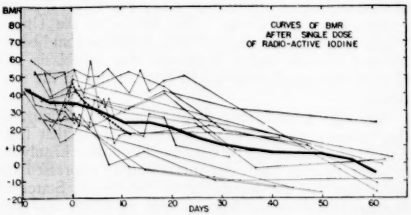

Chart 5.—Curves of basal metabolic rate after a single dose of radioactive iodine. The shaded area is before the treatment. The heavy black line is the average of fourteen curves. The dotted line is the ordinary iodine response curve of Means.

5. Patients who have not responded to other forms of treatment or have been sensitive to iodine or thiouracil have responded well to radioactive iodine. Ordinary iodine is not necessary with radioactive iodine treatment.

6. We believe that therapy with radioactive iodine can be added to the growing list of medical methods for the control of thyrotoxicosis.

266 Beacon Street, Boston 16.

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SURGICAL ASPECTS OF AMEBIC DYSENTERY

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We are reporting 3 cases of amebic hepatic abscess and 1 case of obstructing amebic granuloma of the ileocecal region. These cases were complicated in many respects. Perforation of the abscess to the diaphragmatic region was the first evidence of amebic hepatic disease in 1 of the cases, which was similar to 2 other cases reported by Walters, Watkins, Butt and Marshall.[1] Administration of amebacides, aspiration of the abscess and right hemicolectomy were the successful methods of treatment in the respective cases.

The opinion is still held rather generally, although erroneously, that amebic dysentery is a tropical disease with only sporadic and more or less accidental appearances in the temperate zone. More correctly, it is an endemic disease of all climates and of worldwide distribution. Faust [2] stated that "Endameba histolytica has been found wherever careful coprological surveys have been made on the human population from Saskatchewan, Canada (52° 30′ N.) to the Strait of Magellan

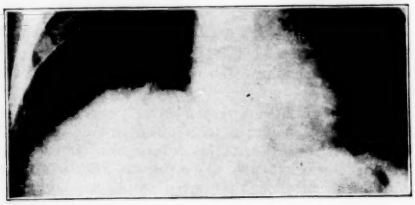

Fig. 1.—Elevation and irregularity of right hemidiaphragm.

(52° S.)." The existence of asymptomatic or convalescent carriers (cyst passers) assures the propagation of the disease by the well known routes of contamination of food and water in which poor hygiene, house flies and cockroaches play a role. The return to the United States of several million overseas veterans from heavily infested regions makes it certain that amebiasis will have an increased incidence in this country in the near future.

Although several surveys of sample populations, by the methods of stool examinations, indicate that from 5 to 10 per cent of our people have Endameba histolytica at some time in their intestines, Faust [2] expressed the belief that "in the population of the United States an average amebiasis incidence as high as 20 per cent may be reached, rather than the accepted figure of 5 to 10 per cent." Craig [3] has estimated that between 6,000,000 and 12,000,000 people in the United States are infected, but Ochsner and DeBakey [4] expressed the belief that a figure of 20,000,000 to 25,000,000 would be more accurate. And, to quote from the latter authors, "the potential number of hepatic complications is approximately one million."

Amebic dysentery is of surgical interest in two ways: First, it simulates more familiar clinical syndromes such as appendicitis, cholecystitis, pancreatitis, perforated peptic ulcer and carcinoma of the colon. Ill advised surgical treatment in the misdiagnosed amebic case, unprepared by specific antiamebic therapy, has been a serious cause of poor results and a high mortality rate, as witness the aftermath of the Chicago epidemic.

Second, the complications of this disease in its original site, the colon (namely, acute perforation with peritonitis, chronic perforation with pericolic abscess, and granuloma) and in its chief metastatic sites (abscess of the liver, lungs and brain) may call for a direct surgical approach in cases in which there is insufficient response to emetine and other amebacides.

Both of these aspects are well illustrated by a report of 4 cases which were observed within a short period at a naval hospital.

REPORT OF CASES

CASE 1.—*Amebic hepatic abscess treated with emetine, other amebacides and closed aspiration.* A marine corporal aged 25 was admitted with a tentative diagnosis of gastroenteritis on Dec. 11, 1944. Five days before admission he had begun to have nausea and vomiting, followed by flatulence and crampy pain in the epigastrium. Following the onset, his stools became liquid and numbered three to four daily.

The patient had had several episodes of dysentery while on active duty in the South Pacific a year previously but with no specific diagnosis or treatment. He had been under atabrine antimalarial suppressive treatment for the past two and a half years, without previous toxic symptoms.

The temperature on admission was 103 F., the pulse rate 120. The patient appeared acutely ill and undernourished. There was an intense yellow pigmentation, which did not involve the scleras. There was enlargement of the liver with epigastric tenderness. A roentgenogram of the thorax, taken on admission, was reported negative.

The concentration of hemoglobin was 10.0 Gm. per hundred cubic centimeters of blood. Erythrocytes numbered 3,340,000 and leukocytes 16,400 in each cubic millimeter of blood. The percentages of the various types of leukocytes were as follows: neutrophils 80, eosinophils 0. The icterus index was 5.6. The concentration of bilirubin was 0.5 mg. in 100 cc. of serum. A blood smear did not show malarial parasites. Stools were constantly negative for amebas.

On December 15 suppression of the breath sounds and relative dulness were noted at the base of the right lung. The patient was transferred to the surgical wards with a tentative diagnosis of subhepatic abscess.

In view of the history of dysentery, acute fever, chills and enlarged, tender liver, a diagnosis of amebic hepatitis and abscess was made.

Sigmoidoscopy revealed two or three small rectal ulcerations, discrete and punched out, with a surrounding zone of congestion. Administration of 0.06 Gm. of emetine daily was begun December 18. The temperature was normal in four days, and administration of emetine was discontinued in nine days.

Because of a persistent tender mass in the epigastrium, on December 28 a small incision was made in the subxiphoid

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At the time this work was done Dr. Lindskog was on leave of absence from Yale University Medical School, New Haven, Conn., and Dr. Walters was on leave of absence from the Mayo Clinic and Mayo Foundation, Rochester, Minn.

1. Walters, Waltman; Watkins, C. H.; Butt, H. R., and Marshall, J. M.: Amebic Abscess of the Liver Unsuspected Until Perforation, J. A. M. A. **125:** 963-966 (Aug. 5) 1944.

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region while the patient was under local anesthesia; 700 cc. of buff colored pus was removed by needle aspiration from a mass in the anterior border of the liver. On Jan. 4, 1945 an additional 50 cc. was evacuated. Sluggishly motile trophozoites were found on smear. On January 3 a second sigmoidoscopy gave negative results. Administration of carbarsone was begun.

Convalescence was smooth and rapid until January 9, when a temperature of 102 F. developed with malaise. The following day the patient had a chill, with a temperature of 104.6 F. A malarial smear was positive for Plasmodium vivax. The patient was given 5 grains (0.3 Gm.) of quinine three times a day for three days, and suppressive treatment by administration of atabrine 0.1 Gm. three times a day was resumed. The temperature remained normal during the rest of the period of hospitalization. The liver was no longer palpably enlarged or tender.

A second ten day course of carbarsone was given beginning January 17, and a seven day course, beginning February 26.

On March 27 the concentration of hemoglobin was 13.0 Gm. per hundred cubic centimeters of blood. Erythrocytes numbered 4,500,000 and leukocytes 10,800 in each cubic millimeter of blood.

The patient was given a convalescent leave and returned to duty April 11, 1945. He has since had one recurrence of malaria but no further intestinal symptoms.

Case 1 illustrates a number of important points. Amebic abscess of the liver may occur many months or many years after the initial colonic infection. In about 50 per cent of cases, one is not so fortunate as to have a clearcut history of antecedent diarrhea or dysentery and acute colonic symptoms are not usually present.[4]

As in this, in about 60 per cent of cases of abscess the stools are negative for amebas on repeated study by the technic of saline catharsis and warm stage examination.

While the leukocyte count is typically elevated to 15,000 or 30,000 in each cubic millimeter of blood, it may be normal in cases of chronic abscess with a well developed wall reaction.

Emetine and the adjunct drugs may not be curative when amebic hepatitis has progressed to gross abscess formation. Yet the effect of the amebacide should be assayed with patience unless rupture seems imminent; such treatment reduces the mortality rate of subsequent surgical treatment from 60 to about 3 per cent and may render any surgical procedure unnecessary.

Aspiration of the abscess with a trocar or needle is preferred to external drainage, as simpler and safer, unless (1) the abscess has ruptured intraperitoneally, (2) it is located in the left lobe (about 15 per cent of cases), (3) it is otherwise inaccessible or (4) it has been demonstrated to be contaminated by pyogenic organisms. Under such circumstances external drainage may be preferable.

The patient may be a simultaneous victim of more than one protozoan parasite, as demonstrated by the concomitant malaria in this case.

CASE 2.—*(1) Amebic hepatic abscess with diaphragmatic perforation and involvement of respiratory tract; (2) evidences of emetine toxemia.* A white man aged 35, a warrant officer, began to have diarrhea in March 1945, the day after he arrived in the United States after eighteen months' shore duty in Brazil. He had three to six loose yellow stools with blood-flecked mucoid particles daily. He had lost about 30 pounds (13.6 Kg.) during the course of his illness and had noted some postprandial distress and anorexia.

On admission, May 3, 1945, his temperature was 99.8 F., pulse rate 120 and respiratory rate 24. There was slight epigastric tenderness. There was mild secondary anemia; leukocytes numbered 9,250 in each cubic millimeter of blood. Stools were repeatedly negative for ova and parasites. The results of roentgenographic examination after a barium enema were reported normal, and sigmoidoscopy showed slight injection of the mucosa but no ulceration. A roentgenogram of the thorax on May 9 (fig. 1) showed a slight irregular elevation of the medial right hemidiaphragm. On May 15 the patient had sudden pain in the right lower portion of the thorax, dyspnea, cyanosis and tachycardia. Another roentgenogram showed an elevated right hemidiaphragm and a region of pneumonitis at the right base. A diagnosis of hepatic abscess rupturing into the subdiaphragmatic region was made; surgical consultants confirmed the impression of amebiasis, and administration of emetine with penicillin was begun on the same day.

On May 21 a roentgenogram (fig. 2) showed the entire right pulmonary field to be obscured by a homogeneous density with cardiac displacement to the left side. Thoracentesis, done cautiously, yielded small amounts of clear sterile fluid, which clotted rapidly and did not contain amebas. Administration of emetine was discontinued after nine days and administration of carbarsone was begun. Although the temperature was nearly normal, a second course of emetine was begun on June 4 because of persistent thoracic signs. After the fourth daily dose there was a sudden onset of tachycardia (pulse rate 140), cyanosis and enlarged, tender liver. Administration of emetine was discontinued. Thereafter the course was smooth. The patient was ordered to limited duty on Oct. 3, 1945 with no complaints, greatly improved in strength and regaining his normal weight rapidly. Examination of stools remained negative for amebas.

Ochsner and DeBakey stated that in a series of 2,490 reported cases of amebic hepatic abscess pleuropulmonary complications occurred in 15.8 per cent. The same incidence occurred in 95 consecutive cases of amebic hepatic abscess admitted to the Charity Hospital and Touro Infirmary, New Orleans.

In case 2 the predominance of thoracic signs and symptoms overshadowed the abdominal picture. Berne [5] stated that this is true in about 30 per cent of cases. The amebic hepatic abscess usually occurs high on the posterior aspect of the right lobe. By a process of aseptic necrosis and inflammatory adhesion it may involve the diaphragm and pleura. When rupture occurs, it may be directly into the bronchial lumens, less commonly into the pleural cavity. Therefore a low lying pneumonitis of uncertain cause should excite suspicion of a subdiaphragmatic lesion.

Case 2 emphasizes further that emetine is a toxic alkaloid, a protoplasmic poison with cumulative action and a strong affinity for muscle tissue; this accounts, probably, for the evidence of myocardial failure on the fourth day of the second course and the necessity for discontinuance of the drug.

The presence of free pleural fluid of a clear, highly proteinaceous type indicated an impending or walled off rupture of the abscess below. A surgical approach through the twelfth rib might have expedited the cure. It was contemplated twice, but each time a little improvement postponed it. Patience proved to be a virtue in this case.

CASE 3.—*Obstructing amebic granuloma of ileocecal region not responding to amebacides and treated by right hemicolectomy.* In September 1944 a white seaman aged 27 was one of a small group who suffered from typical acute amebic dysentery by infection from a cyst-passing food handler. The patient had severe diarrhea, lower abdominal cramps and watery stools containing blood-streaked mucus and amebas. He was treated with emetine and carbarsone and was well in twenty-six days. He did not receive enemas of chiniofon or other colonic irrigations.

5. Berne, C. J.: Diagnosis and Treatment of Amebic Liver Abscess, Surg., Gynec. & Obst. **75**: 235-238 (Aug.) 1942.

Three weeks prior to admission on April 19, 1945 he had a recurrence of diarrhea, profuse liquid reddish brown stools and lower abdominal cramps. He received a course of 6 grains (0.4 Gm.) of emetine, which caused partial improvement.

On admission the concentration of hemoglobin was 12.5 Gm. in 100 cc. of blood. Erythrocytes numbered 4,470,000 and leukocytes 9,850 in each cubic millimeter of blood. Of the leukocytes 4 per cent were eosinophils. Stools were negative for amebas until June 2, when a single doubtful positive result was obtained. Physical examination revealed severe tenderness over the course of the colon, particularly in the right lower quadrant. Sigmoidoscopy revealed pin-point ulcerations in the rectum.

The patient was treated in the gastrointestinal ward with courses of sulfathalidine and carbarsone over a long interval. One seven day course of emetine hydrochloride was given in June and a ten day course in August. After a temporary improvement he began to show increasing secondary anemia, and a discrete movable tumor mass appeared in the right lower quadrant. Stools were again liquid and numbered three to six daily. Roentgenographic studies after administration of barium revealed a constrictive filling defect at the ileocecal junction.

On September 12 the patient was transferred to the surgical service and was given a low residue diet and sulfathalidine, with vitamin concentrates. On September 21, while he was under continuous spinal anesthesia, right hemicolectomy with side to side anastomosis was performed with the use of silk sutures. The terminal ileum and cecum were found to be thickened and edematous; a mass having a diameter of 4 cm. was present in the ileocecal junction. The regional nodes were hyperplastic.

Postoperatively the course was smooth. Emetine was given (0.06 Gm.) for seven days and penicillin for eight days. The patient was up in a chair the tenth day, and stools were

Fig. 2.—Obscuration of right pulmonary field, with cardiac displacement to left.

reduced to two soft formed ones daily. On October 10 the concentration of hemoglobin was 13.0 Gm. per hundred cubic centimeters of blood; erythrocytes numbered 4,100,000 and leukocytes 7,100 in each cubic millimeter of blood. The subsequent course was excellent.

The pathologist described a chronic granuloma of the ileocecal juncture, with small superficial ulcerations in the ascending colon. Scrapings of these ulcers did not show definite amebas (fig. 3).

Although amebic granulomas are uncommon complications, several cases have been reported. Such granulomas are most commonly located in the cecum or the sigmoid. They are probably a phase of intercurrent secondary infection, which may eventuate in chronic ulcerative colitis. With repeated recurrences of the

Fig. 3.—Chronic amebic granuloma of the ileocecal juncture.

infection, destruction of the bowel wall and fibrous tissue replacement occur, producing stenosis. Granulomas are frequently multiple; usually amebas are not observed in them. They simulate neoplasms strongly both in symptoms and in physical findings.[6] They have been known to cause intussusception, obstruction[7] and gross bleeding. Their surgical extirpation has in the past been fraught with high risk.

An attempt should be made to eliminate a granuloma first by specific chemotherapy; frequently such treatment is unsuccessful. Resection must be done with an accurate closed technic; the operation should be preceded and followed by amebacidal therapy. The establishment of a colonic stoma is to be avoided: among other things, amebic infection of the abdominal wall has been reported.

One naturally raises the question as to whether local treatment of the large bowel at the time of first infection might have prevented a recurrence and the late complication in case 3. The experience of British and American physicians in the China-Burma-India campaigns suggests that direct treatment of the bowel by oxyquinoline drugs is necessary after the control of the

6. Donald, C. J., Jr., and Brown, P. W.: Amebic Granuloma Simulating Carcinoma of the Rectum, Proc. Staff Meet., Mayo Clin. **15**: 321-323 (May 22) 1940.

7. Likely, D. S., and Lisa, J. R.: Granuloma of the Large Intestine Associated with Amebiasis, New York State J. Med. **42**: 2322-2323 (Dec. 15) 1942.

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acute phase with emetine.[8] Emetine has a remarkable clinical effect on the acute disease but clears the bowel of all parasites in only 15 per cent of cases.

CASE 4.—*Recurring amebic hepatic abscess responding to administration of emetine and penicillin.* A white veteran aged 25, admitted on Aug. 18, 1945 with a diagnosis of cholecystitis and empyema of the gallbladder, complained chiefly of pain in the right upper quadrant of the abdomen.

He had been discharged from an army hospital in July 1945 after ninety days' hospitalization for a subdiaphragmatic abscess on the right side. At that time he had returned recently from the tropics but had not had an antecedent operation or acute abdominal illness. Penicillin therapy, aspiration and emetine were followed by resection of the twelfth right rib and drainage of a large hepatic (?) abscess.

One week before admission he was discharged from the Army. The same day he began to have pain in the epigastrium and right upper quadrant. Four days before admission, increasing fever was noted.

Physical examination on admission revealed a temperature of 102 F., rising to 104, a pulse rate of 92 and a respiratory rate of 28. There was a scar of previous rib resection in the right lower posterior aspect of the thorax, with deep tenderness and slight fulness beneath it. Leukocytes numbered 11,700 in each cubic millimeter of blood, with 67 per cent of neutrophils. A roentgenogram of the thorax showed an enlarged hepatic shadow, an elevated right diaphragm and pneumonitis at the right base. Sigmoidoscopy was negative for ulcerations.

Administration of penicillin was begun August 19 and of emetine August 21. The temperature was normal on the eighth day and remained so thereafter. Tenderness and fulness under the thoracotomy scar disappeared. Elevation of the right hemidiaphragm subsided progressively, and aeration at the right base improved. The patient was discharged on the twenty-fourth hospital day.

In case 4 the diagnosis is certainly not proved, but it is strongly presumptive for amebic abscess, residual or recurrent in the liver. This case illustrates one danger of external surgical drainage such as is usually employed for pyogenic abscess. An amebic hepatic abscess is almost always sterile to ordinary culture, but it does not remain so after external drainage and the advent of dermal pyogenic contaminants. When external drainage becomes necessary great care must be taken that the cavity be closed before the drainage tube is removed. The triad of enlarged tender liver, high diaphragm and basilar pneumonitis is illustrated by this case.

Combined treatment with penicillin and emetine gave a rapid and excellent result. It was felt that the therapeutic test was preferable to surgical reexploration as long as one kept in mind the possible toxic manifestations of the drug employed.

SUMMARY

In 3 cases of amebic hepatic abscess and 1 of amebic granuloma of the cecum occurring among personnel of the Army or Navy the use of amebacides, especially emetine, was of great value as a preliminary to aspiration of the abscess in 1 case and in the conservative treatment in 2 cases. In 1 of these cases perforation of the abscess through the diaphragm (nonsurgical) to the pleuropulmonary region occurred and in the other a right hepatic abscess recurred after open drainage. In 1 case the obstructing amebic granuloma in the ileocecal region was not affected by emetine and right hemicolectomy was performed. The result was successful.

8. Circular Letter No. 24, British Medical Liaison Officer, Carlisle Barracks, Pa., Oct. 17 1945.

LIFE EXPECTANCY IN ANGINA PECTORIS

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In recent years there has been a gradual change in the conception of the prognosis of patients who have angina pectoris. As additional follow-up studies are recorded, one may note a favorable lengthening of the average survival period of patients who have this disease.[1] No one would wish to contend that the diagnosis of coronary sclerosis with angina pectoris does not carry with it an element of seriousness and insecurity which usually necessitates a decided modification of the patient's manner of living. However, there is now reason to believe that the average patient who has angina pectoris may anticipate a longer survival than was thought reasonable to predict a few years ago. Investigations of the pathologic characteristics of coronary heart disease have led to an increased appreciation of the amazing extent to which the heart is capable of readjusting itself to pathologic processes involving the coronary blood vessels, even though the natural tendency of these processes may be one of progression.

Unless the physician has the unique opportunity of observing personally a group of anginal patients sufficiently large to allow for statistical accuracy and of following their course until all have died, he cannot know the average duration of life in that group. Such an analysis is seldom possible. Recently, however, White, Bland and Miskall have reported a follow-up study of 497 cases of angina pectoris observed over a period of twenty-three years in which only 52 patients still survived. The average duration of the disease for the 445 who died was 7.9 years. The average duration of the disease for patients still living was 18.4 years. As the mortality rate of the patients still living remains a question, the true figures indicating the mortality rate of the whole group cannot be determined; yet this report no doubt represents the most accurate and complete study made of this type.

METHOD OF STUDY

A follow-up study was conducted on all patients examined at the Mayo Clinic from Jan. 1, 1927 to Dec. 31, 1936 inclusive for whom a diagnosis of angina pectoris was made. Those patients whose records did not contain adequate information as to survival were traced by letter. There were 3,440 cases which formed the basis of this statistical analysis. The data obtained from these records were analyzed with the assistance of the Division of Biometry and Medical Statistics. For the most part the method used in the calculation of survival rates was that employed in actuarial prac-

From the Section on Cardiology (Drs. Parker, Dry and Willius) and the Division of Biometry and Medical Statistics (Mr. Gage), Mayo Clinic.

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tice.[2] This method is governed by mathematical laws which allow computation of the desired data as to survival rates even though a considerable number of the patients falling within the scope of our study were still living at the time the investigation was conducted. The data submitted for analysis were under date of Jan. 1, 1942, allowing a minimal known survival period of at least five years for those patients still living.

Granted that statistical studies of survival in such a condition as coronary sclerosis with angina pectoris do not make available data with which one can predict with accuracy the prognosis in any individual case, such a study as this does give an opportunity to evaluate better what influencing factors contribute toward a favorable or unfavorable prognosis.

Information which was available from these records and which seemed pertinent to the determination of survival rates included the duration of symptoms (the anginal syndrome) prior to the time the diagnosis was made at the clinic, the age and sex of the patient, the presence or absence of associated hypertension and its severity, the presence or absence of cardiac hypertrophy, congestive heart failure, data as to the development of previous or subsequent coronary thrombosis with cardiac infarction and the presence or absence of significant electrocardiographic abnormalities.

AGE DISTRIBUTION

The average age of the patients at the time of onset of the anginal syndrome (table 1) was 57.1 years. The youngest patient was 22 years and the oldest 92 years of age. The average age of women (58.0 years) was slightly greater than that of men (56.9 years). Eighty-eight per cent of the patients were included in the age groups from 40 to 69 years. Only 3.6 per cent of all patients were younger than 40 years of age, and 8 per cent were 70 years of age or older.

Analysis of the patients' histories indicated that the syndrome of angina pectoris had been present prior to the time of their examination at the clinic for periods varying from a few days to eighteen years. The majority of patients had suffered with angina pectoris for a period of two years or less prior to their examination. This group included 2,555 patients (74.3 per cent). Ninety-eight patients (2.8 per cent) had had symptoms of angina pectoris for ten years or more prior to the time of examination. (A considerable number of patients in this group had been examined at the clinic in years prior to the period of this study [1927 to 1936 inclusive] and the diagnosis of angina pectoris had been made, but these patients were reexamined and the diagnosis was confirmed during the period included in this survey.)

TABLE 1.—*Age of Patients at Time of Onset of Angina Pectoris According to Sex*

	Total		Males		Females	
Age, Years	Number	Per Cent	Number	Per Cent	Number	Per Cent
20-29	8	0.2	7	0.2	1	0.2
30-39	117	3.4	95	3.4	22	3.4
40-49	646	18.8	546	19.6	100	15.5
50-59	1,320	38.4	1,083	38.8	237	36.7
60-69	1,073	31.2	837	30.0	236	36.5
70-79	266	7.7	218	7.8	48	7.4
80-89	9	0.3	7	0.2	2	0.3
90+	1	*	1	*	0	0
Total	3,440	100	2,794	100	646	100

* Less than 0.1 per cent.

SEX DISTRIBUTION

Table 2 gives the age and sex distribution at the time of our diagnosis of angina pectoris. Of the entire group there were 2,794 men and 646 women, giving a ratio of 4.3:1. In comparing the sex distribution by age at the time of examination there does not seem to be any consistency in the ratio of male patients to female patients, the ratios being for the fourth decade 3.2:1, for the fifth decade 6.8:1, for the sixth decade 4.8:1, for the seventh decade 3.5:1 and for the eighth decade 4.3:1. The number of cases in the third and ninth decades is hardly sufficient to allow for statistical evaluation. In the fifth decade the male patients represented 16.1 per cent of the total male group and the female patients represented 10.2 per cent of the total female group. Considering the general impression of infrequency of occurrence of angina pectoris among women less than 50 years of age, 10.2 per cent may seem amazingly high. In all probability details of these cases would reveal evidence of associated vascular disease due to hypertension in a higher percentage of this group which would tend to predispose them to the early development of coronary insufficiency.

TABLE 2.—*Age of Patients at Time of Diagnosis of Angina Pectoris According to Sex*

	Total		Males		Females	
Age, Years	Number	Per Cent	Number	Per Cent	Number	Per Cent
20-29	3	0.1	2	0.1	1	0.2
30-39	59	1.7	45	1.6	14	2.2
40-49	517	15.0	451	16.1	66	10.2
50-59	1,220	35.5	1,008	36.1	212	32.8
60-69	1,254	36.5	974	34.9	280	43.3
70-79	368	10.7	299	10.7	69	10.7
80-89	18	0.5	14	0.5	4	0.6
90-99	1	*	1	*	0	0
Total	3,440	100	2,794	100	646	100
Mean age	59.1 yrs.		58.8 yrs.		60.2 yrs.	
Youngest	28 yrs.					
Oldest	92 yrs.					

* Less than 0.1 per cent.

In the age groups of 60 years and older there was a total of 46.1 per cent of the total male group as compared with 54.6 per cent of the total female group. Although this difference is not great, it does add confirmation to the impression generally accepted that coronary disease in women is likely to become manifest at a later average period of life than in men.

SURVIVAL RATES IN CASES OF ANGINA PECTORIS

In the upper portion of chart 1 are shown the percentages of patients having angina pectoris who survived for the specified numbers of years after onset of the anginal syndrome. In the lower portion of chart 1 are shown the percentages of patients who survived for the specified numbers of years after the diagnosis of angina pectoris had been made at the clinic. Both curves are compared with the survival curves of normal populations of similar age and sex distribution.

These curves clearly show that the survival rate in each instance is much less than that of the normal

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population. It is of particular interest to note that from year to year the rate of survival remains nearly constant. The steepest descent in the survival curve, indicating a higher mortality rate, is seen in the first year following the time of diagnosis (lower portion of chart 1). During this year 18 per cent of the patients succumbed or, in other words, there was a survival rate for the first year of 82 per cent. In contrast to this figure, during the first year from the time of onset of symptoms of angina pectoris the survival rate was 94 per cent, or the mortality rate was 6 per cent. More clearly, perhaps, these figures indicate that, of every hundred patients having angina pectoris at an average age of 57 years, 5 or 6 would succumb during the first year from the time symptoms first developed while 18 patients of each hundred at an average age of 59 years would succumb to the disease during the first year subsequent to the date when they presented themselves at the clinic for examination. By the end of the second year after diagnosis we find that of each hundred patients 27 will have succumbed, in comparison to a mortality rate of 4.7 for the average population. From year to year thereafter the survival curve indicates a rather constant mortality rate of approximately 10 per cent among the survivors.

SURVIVAL RATES AMONG PATIENTS OF DIFFERENT SEX

That the women who have angina pectoris tend to survive longer than men who have angina pectoris has long been the accepted opinion of most physicians. Further confirmation of this opinion is presented in this study. In table 3 and the lower part of chart 1 the survival rates of all patients according to sex as compared with the total series and the normal population are presented. These survival rates were determined as of the time when the diagnosis of angina pectoris was established by examination at the clinic. It is

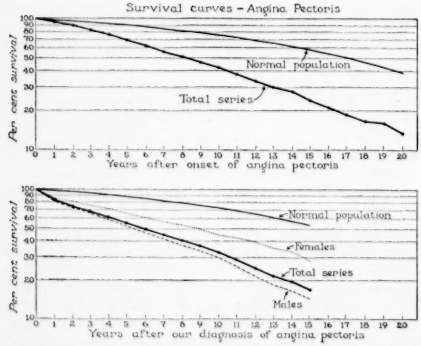

Chart 1.—Survival curves of patients who had angina pectoris and of a normal population of the same age and sex distribution.

clearly shown that from the first year through the fifteenth year the survival rate of women who have angina pectoris is consistently and increasingly higher than that of the male group of patients. This greater survival rate of women than of men raises many questions regarding the etiology of vascular degenerative changes for which so far no adequate explanation is available.

FIVE YEAR SURVIVAL RATES AMONG PATIENTS OF DIFFERENT AGE GROUPS

In table 4 are presented the five year survival rates according to age of patients at time of examination, based on a review of data for 2,827 traced patients. Since only the five year survival rates were desired for comparison at the various age levels the actuarial method of calculation was not employed. In such instances a more direct method of computation seems advisable and the table illustrates the method. The last column in the table gives the survival rates for each decade after an adjustment has been made for the normal death rate.

TABLE 3.—*Survival Rates of Patients, According to Sex, Having Angina Pectoris*

Interval Following Time of Diagnosis at Clinic, Years	Last Report: Dead	Last Report: Living	Total Persons Living at Beginning of Interval	Person Years Exposed	Probability of Dying in Interval	Survival Rate, per Cent
Males						
0- 1	456	...	2,418	2,418	0.1886	100
1- 2	226	39	1,962	1,942.5	0.1163	81.1
2- 3	152	22	1,697	1,686	0.0902	71.7
3- 4	171	23	1,523	1,511.5	0.1131	65.2
4- 5	135	24	1,329	1,317	0.1025	57.9
5- 6	125	107	1,170	1,116.5	0.1120	51.9
6- 7	83	133	938	871.5	0.0952	46.1
7- 8	74	102	722	671	0.1103	41.7
8- 9	51	68	546	512	0.0996	37.1
9-10	42	64	427	395	0.1063	33.4
10-11	43	45	321	298.5	0.1441	29.9
11-12	34	53	233	206.5	0.1646	25.6
12-13	18	33	146	129.5	0.1390	21.4
13-14	9	27	95	81.5	0.1104	18.4
14-15	6	23	59	47.5	0.1263	16.4
15+	3	27	30	...	.....	14.3
Females						
0- 1	82	..	555	555	0.1477	100
1- 2	30	8	473	469	0.0640	85.2
2- 3	27	8	435	431	0.0626	79.8
3- 4	22	7	400	396.5	0.0555	74.8
4- 5	26	7	371	367.5	0.0707	70.6
5- 6	25	28	338	324	0.0772	65.6
6- 7	20	31	285	269.5	0.0742	60.6
7- 8	11	32	234	218	0.0505	56.1
8- 9	14	24	191	179	0.0782	53.2
9-10	13	27	153	139.5	0.0932	49.1
10-11	5	22	113	102	0.0490	44.5
11-12	5	23	86	74.5	0.0671	42.3
12-13	5	18	58	49	0.1020	39.5
13-14	2	9	35	30.5	0.0656	35.5
14-15	3	7	24	20.5	0.1463	33.1
15+	3	11	14	...	.....	28.3

Although the calculations were carried out for the groups less than 30 years and for those 80 years of age or more, the paucity of data does not allow a proper interpretation for these age groups. The average five year survival rate for the entire group was 53.2 per cent, indicating that of each hundred patients 47 have succumbed before the end of the fifth year from the time the diagnosis was established and 53 patients were known to be alive at the end of this period. The survival rates for the fifth and sixth decades were more favorable than for the fourth decade of life. If, however, we adjust this survival rate to eliminate the effect of deaths from other causes than angina pectoris, we obtain the information that the rates from the fifth decade to the eighth decade inclusive are more favorable than the rate for the fourth decade. We think this finding is of special significance, and this must necessarily alter the general interpretation by physicians regarding the favorable influence of youth on the prognosis of patients having coronary sclerosis and angina pectoris. It is well known that the mortality rate following acute coronary thrombosis is much lower in the younger age groups than in later decades;

yet it would seem from this survey that the mortality rate of patients having the anginal syndrome in the fourth decade is higher than in the later years of life.

It has been our impression that, when coronary heart disease with the anginal syndrome becomes manifest among patients in the fourth decade of life or earlier, it is most often precipitated by an acute coronary closure. Less often do we obtain a history of gradual progressive anginal distress on exertion among such patients but rather more dramatic incidents indicative of impending, if not already actual, infarction. The patient who has the anginal syndrome in the fourth decade of life or earlier is likely to be one who has previously sustained myocardial damage, whereas the older patient is likely to present a history indicative of more gradual development of coronary insufficiency. This may to some extent explain our finding of a lowered survival rate among young patients who have angina pectoris.

FACTORS INFLUENCING PROGNOSIS: FIVE YEAR SURVIVAL STUDIES

Cardiac Hypertrophy.—Regardless of the cause of the cardiac lesion in question—whether it is rheumatic heart disease, congenital heart disease or coronary heart disease—it has long been appreciated that the factor of cardiac hypertrophy plays an important role in the evaluation of the ability of the heart to withstand the effects of such a disease process. In this study we established further confirmation of the importance of the finding of cardiac enlargement in influencing the survival rates of patients who had angina pectoris.

In table 5 the five year survival rates of patients who had cardiac enlargement as determined both by clinical and by teleoroentgenographic examination are compared with the survival rates of those who did not have cardiac enlargement. Again the calculation of the five year survival rates was made by the direct method. The five year survival rate of patients who had no clinical or roentgenographic evidence of cardiac enlargement was 62.1 per cent, whereas the corresponding rate for those patients who had associated cardiac hypertrophy was only 38.8 per cent.

TABLE 4.—*Five Year Survival Rates by Age at Time of Examination of Patients Having Angina Pectoris*

Age, Years	Total Patients*	Traced Patients	Lived Five or More Years Following Diagnosis at Clinic: Number	Lived Five or More Years Following Diagnosis at Clinic: Per Cent of Traced Patients	Survival Rate Adjusted for Normal Death Rate
20-29	3	3	2	66.7	68.5
30-39	59	56	27	54.0	56.0
40-49	515	432	270	62.5	63.7
50-59	1,202	1,014	573	56.5	62.4
60-69	1,239	1,029	529	51.4	63.7
70-79	360	284	101	35.6	58.8
80-89	17	14	2	14.3	45.4
90+	1	1	1	...	...
Total	3,396	2,827	1,505	53.2	60.8

* Inquiry as of Jan. 1, 1942. Included here are cases in which the diagnosis was made five or more years prior to the time of inquiry, that is, in 1936 or earlier.

Hypertension.—Since the presence of associated hypertension in cases of coronary heart disease is the primary factor in the causation of cardiac hypertrophy, one might well expect that the five year survival rate for patients who had angina pectoris and associated hypertension would be less than that of patients who had angina pectoris without hypertension. This we found to be the case. The five year survival rate of patients without hypertension was 60.6 per cent as compared with a five year survival rate of 46.1 per cent for patients who had associated hypertension.

TABLE 5.—*Five Year Survival Rates of Patients Having Angina Pectoris According to Factors Influencing Prognosis*

	Total Patients*	Traced Patients	Lived Five or More Years Following Diagnosis at Clinic: Number	Lived Five or More Years Following Diagnosis at Clinic: Per Cent of Traced Patients
Cardiac hypertrophy	1,279	1,076	417	38.8
No cardiac hypertrophy	2,117	1,751	1,088	62.1
Hypertension:				
Fundus classification				
Normal (without hypertension)	959	781	473	60.6
Group 1 hypertension	597	499	260	52.1
Group 2 hypertension	342	279	117	41.9
Group 3 hypertension	64	55	9	16.4
Group 4 hypertension	6	4	0	0
Choroidal sclerosis	148	126	53	42.1
Previous cardiac infarction	742	640	289	45.2
Subsequent cardiac infarction	144	140	51	36.4
Congestive heart failure	200	189	31	16.4

* Inquiry as of Jan. 1, 1942. Included here are cases in which the diagnosis was made five or more years prior to the time of inquiry, that is, 1936 or earlier.

It would likewise be anticipated that the severity of the associated hypertension would reflect itself in the survival rates of patients who had angina pectoris. For a number of years it has been our policy to classify patients having essential hypertension into groups based primarily on the degree of vascular changes in the retinal arteries as seen on funduscopic examination. It may be seen from table 5 that the five year survival rate decreased as the severity of hypertension increased.

The importance of the factors of hypertension and cardiac hypertrophy in the determination of the ultimate failure of the heart of the anginal patient has long been appreciated, and the foregoing figures tend to emphasize this point further; yet clinical experience shows that the anginal patient without clinical evidence of cardiac hypertrophy or hypertension may succumb to the disease even at an early date after the onset of the anginal syndrome. It would seem that the heart laboring under the burden of both hypertension and coronary sclerosis can remain compensated through hypertrophy only as long as the coronary circulation will allow it to maintain a minimal requirement of nutrition.

It has been the impression of ophthalmologists that arteriosclerotic changes involving the choroidal arteries as seen on funduscopic examination are a reflection of the degree of arteriosclerotic changes in other systemic arteries, including the coronary arteries. The five year survival rate of 126 traced patients in whose eyes an ophthalmologist noted choroidal arteriosclerosis of a significant degree on funduscopic examination was 42.1 per cent. The average age of this group of patients who had choroidal arteriosclerosis was 64 years. The five year survival rate for all patients in the seventh decade was 51.4 per cent. The decrease of the survival rate of patients who have choroidal arteriosclerosis as compared with the rate for all patients of approximately the same age tends to corroborate the impression that choroidal arteriosclerosis reflects advanced systemic arteriosclerosis.

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Most physicians have obtained a clearer overall picture of the problem of coronary heart disease since the enlightening studies of the pathologic changes of coronary heart disease made by Blumgart, Schlesinger and Davis.[3] They have come to realize that closure of coronary vessels has already occurred in the majority of patients who present the syndrome of angina pectoris whether or not a critical survey of the patient's history would indicate any one or more episodes which could be interpreted according to classic criteria as acute coronary thrombosis. That cardiac infarction may occur in the absence of complete closure of a coronary artery is also known to be true. More evidence is accumulating to dispel the previous assumption that coronary disease represents a disease of unrelenting progression. Instead, physicians have come to realize that its progression is characterized more often by periods of crisis initiated by sudden partial or complete occlusive episodes and then followed by periods of recession of symptoms associated with revascularization and healing. Even though the progression of coronary disease in most cases of angina pectoris is punctuated by episodes of coronary occlusion with or without cardiac infarction and many such episodes go unrecognized clinically, it would seem reasonable to assume that when a person who has angina pectoris has suffered an attack recognized clinically as occlusion with cardiac infarction and has recovered from the acute phase of this illness his probability of survival for a given period would be decreased. Of the patients whose examinations indicated that they had sustained previous coronary thrombosis with cardiac infarction the five year survival rate was 45.2 per cent as compared with the average survival rate of 53.2 per cent. Of the patients who had sustained a subsequent coronary occlusion the five year survival rate was only 36.4 per cent.

Congestive Heart Failure.—It has been a common assumption that the prognosis is extremely unfavorable in those cases of angina pectoris in which congestive heart failure develops, and this assumption is supported by data recorded in this study. The five year survival rate for patients who had congestive heart failure at the time of their examination at the clinic was only 16.4 per cent. The five year survival rate of patients who had congestive failure, regardless of etiology, is 30 per cent, as reported by Dry.[4]

Influence of Abnormal Electrocardiographic Changes on the Survival Rates.—Although one must be constantly aware of the limitations of the electrocardiogram in the diagnosis of coronary disease, no one can seriously doubt its importance as a diagnostic aid, especially in this field of cardiology. Even though certain changes in the electrocardiogram may confirm the clinical impression of the presence of coronary disease, it has been emphasized time and again that these changes do not necessarily constitute a measure of the functioning myocardium and thus do not constitute definite prognostic criteria in the individual case. In a study such as this, however, it is of interest to determine the course with regard to the survival of patients with angina pectoris having significant electrocardiographic abnormalities as compared with those who have normal electrocardiograms.

The cases were divided into three main groups: (1) those in which the electrocardiograms were normal or had only minor abnormalities not considered significant, (2) those with significant T wave negativity or Q wave changes or both[5] and (3) those with significant conduction disorders.[6]

The survival curves for these three groups, presented in chart 2, demonstrate a well defined decrease of the survival rates among the patients who had significant electrocardiographic changes in comparison with the group whose tracings were normal.

During the first year after diagnosis there was a survival rate of 89 per cent in the group in which the tracings were normal as compared with the group with T wave negativity and Q wave changes, in which the survival rate was 76 per cent, and 68 per cent in the group with conduction disorders. From the first year on, the survival curves in the groups with positive electrocardiographic changes tend to parallel one another with approximately a consistent decrease of survival rate of about 10 per cent in the group with conduction defects in comparison to the T and Q wave groups.

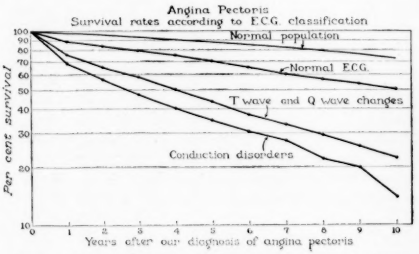

Chart 2.—Survival curves of patients who had angina pectoris classified by their electrocardiographic characteristics.

Both these curves diverge at a fairly uniform rate from the survival curve of the normal group. At the end of five years 70 per cent of the group who had normal electrocardiograms were living as compared with a survival rate of 43 per cent for the T and Q wave group and of only 35 per cent for the conduction defect group. At the end of ten years, of each hundred patients having angina pectoris whose examination disclosed a normal tracing 50 still survived; of 100 patients whose electrocardiograms showed T wave negativity or prolonged Q_3 pattern 22 were still alive; but only 14 patients of each hundred who had conduction disorders survived the ten year interval. One may reasonably conclude from these survival rates that the finding of positive electrocardiographic changes of the type included in this study is indicative of a much poorer chance of survival than that of the average patient who has angina pectoris.

In table 6 are recorded the five year survival rates of patients who had various types of electrocardiographic abnormalities. This table is similar to those previously recorded for survival rate by age groups.

3. Blumgart, H. L.; Schlesinger, M. J., and Davis, David: Studies on the Relation of the Clinical Manifestations of Angina Pectoris, Coronary Thrombosis and Myocardial Infarction to the Pathologic Findings, with Particular Reference to the Significance of the Collateral Circulation, Am. Heart J. **19**: 1-91 (Jan.) 1940.

4. Dry, T. J.: Congestive Heart Failure: Factors Influencing the Ultimate Prognosis, J. A. M. A. **118**: 263-266 (Jan. 24) 1942.

5. Diphasic or inverted T_1; inverted T_1 and T_2, or inverted T_1, T_2 and T_3; prolonged Q_3.

6. Prolonged auriculoventricular conduction; bundle-branch block (concordant, discordant and wide S wave types); complete auriculoventricular dissociation.

hypertension groups, cardiac hypertrophy and so forth. Included here are only cases in which the diagnosis was made five or more years prior to the time of follow-up inquiry. Perhaps the most significant finding in table 6 is the large number of cases in which the electrocardiograms were normal. If the group in which left axis deviation was the only electrocardiographic abnormality is combined with the normal group, a total of 1,370 cases, or 40 per cent of the total cases reviewed, had no significant electrocardiographic changes. The reasonableness of including those cases with only left axis deviation in the normal group is confirmed when we note that the survival rate in the two groups for the five year interval was almost identical, 69.3 per cent and 69.5 per cent respectively.

The five year survival rate for the group of patients having T wave negativity in lead 1 was almost twice as favorable as for the group having T wave negativity in both leads 1 and 2, 42.7 per cent and 22.4 per cent respectively. That the five year survival rate in the group having T wave negativity in all three standard leads should be considerably better (38.6 per cent) than the survival rate of those patients having negative T_1 and T_2 is an unexpected finding provocative of explanation. Since no attempt was made, however, in this review to study in detail the types of cases falling into each group, we cannot at this time suggest what other factors may have been present to alter the survival rate in this or any other group recorded here.

TABLE 6.—*Five Year Survival Rates of Patients Having Angina Pectoris According to Electrocardiographic Classification*

Results of Electrocardiogram	Total Patients*	Traced Patients	Lived Five or More Years Following Diagnosis at Clinic	
			Number	Per Cent of Traced Patients
Normal	529	433	300	69.3
Left axis deviation	841	679	472	69.5
Total	1,370	1,112	772	69.4
Inverted T_1	522	445	190	42.7
Inverted $T_{1,2}$	281	228	51	22.4
Inverted $T_{2,3}$	429	363	174	47.9
Inverted $T_{1,2,3}$	169	140	54	38.6
Inverted T_2, Q_2 or Q_3 alone	167	136	64	47.1
Left bundle-branch (concordant) block	138	126	39	31.0
Left bundle-branch (discordant) block	114	102	33	32.4
Right bundle-branch block	6	5	2	40.0
Wide S wave	28	25	14	56.0
Complete heart block	4	4	1	25.0
Delayed auriculoventricular conduction	73	67	21	31.3
Auricular fibrillation	70	57	10	17.5

* Inquiry as of Jan. 1, 1942. Included here are cases in which the diagnosis was made five or more years prior to the time of inquiry, that is, in 1936 or earlier.

T wave negativity was the most common significant electrocardiographic abnormality noted and was found in approximately half of the cases. It would seem that patients having T wave negativity in leads 2 and 3 and those having a Pardee Q pattern in lead 3 had a slightly more favorable survival record than those having T wave changes in lead 1 or leads 1 and 2.

As was previously noted in the determination of the survival curves by the actuarial method, we find in table 6 that in general the five year survival rate of patients having conduction disorders is less than the survival rate of those having T wave negativity. However, there is one exception which demands emphasis and that is the relatively favorable five year survival rate (56 per cent) of patients having the wide S wave type of bundle-branch block. The corresponding survival rates in left concordant and left discordant bundle-branch block were 31 per cent and 32 per cent respectively. This we believe again serves to stress the clinical importance of not confusing the wide S wave type of conduction pattern with other types of bundle-branch block.[7]

The lowest five year survival rate (highest mortality rate) of any of the groups listed is found among the patients having auricular fibrillation. Of this small group only 17.5 per cent were alive at the end of five years. As auricular fibrillation is likely to be a late development in the course of coronary heart disease and is most often associated with congestive heart failure, a low survival rate would have been anticipated for this group.

Probably the most significant finding of the electrocardiographic survey included in this study is the large proportion of patients (40 per cent) whose electrocardiograms were within the limits of normal variation at the time a positive diagnosis of angina pectoris was made. Studies of survival curves and five year survival rates of traced patients indicate that when significant electrocardiographic abnormalities are found among patients having angina pectoris the survival rates are considerably reduced.

SUMMARY

The survival rates of patients having the anginal syndrome of coronary arterial disease were determined for a group of 3,440 patients examined at the Mayo Clinic over a period of twenty years. The data obtained from this study were analyzed critically in the Division of Biometry and Medical Statistics. Follow-up letters were sent to all patients when our records did not contain the latest information regarding their status at the time of analysis of the data. All survival rates of these patients were compared with the survival rates of a comparable group of the normal population having the same age and sex distribution. This control is obviously the necessary yardstick for comparative study.

The average age of onset of the anginal syndrome was slightly earlier for men than for women. While there was wide variation in age of the patients at the onset of symptoms, 88 per cent of the patients were in the fifth, sixth and seventh decades of life. The ratio of men to women was 4.3 : 1.

The highest mortality rate occurred in the first year following the establishment of the diagnosis of coronary arterial disease with angina pectoris. Thereafter the yearly mortality rate was less, although it continued relentlessly yearly throughout time.

The survival rates of women having the anginal syndrome are greater than those of men.

When corrected for deaths not due to angina pectoris, the five year survival rate of patients 30 to 39 years of age with the anginal syndrome is definitely shorter than when the disease manifests itself later in life.

Such associated conditions as cardiac hypertrophy, well defined hypertension, previous cardiac infarction, congestive heart failure and significant electrocardiographic abnormalities are clearly related to a higher mortality rate and lower survival rates.

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THE SYNDROME OF AIRBLAST CONCUSSION: CEREBRAL

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In the first world war the syndrome of shell shock was given considerable prominence in the medical literature. The symptoms of the condition identified with this diagnosis were supposed to have been produced by the blast effect of nearby exploding shells on the human brain. It was thought that the force of the blast transmitted through the air and into the cranial cavity disarranged the cytoarchitecture of the cortex by some sort of molecular disruption and that the brain so damaged produced the clinical signs that were associated with the condition. These were extreme irritability, pronounced startle reaction, bizarre tremors and automatic movements, some loss of memory, headaches and a decided drop in efficiency. The absence of neurologic signs with these symptoms and the total absence of other data that would indicate structural damage to the brain caused many at the time to doubt that these effects were due to the physical energy of the blast. The production of these identical symptoms by other factors than nearby explosions such as a violent disruptive death of a companion or some other horrible emotional experience as well as the successful therapy in many of these cases by purely psychiatric procedures finally reduced shell shock to the category of a severe hysteric-anxiety syndrome and the term fell into disrepute.

The reviews by Viets [1] in 1917 and the articles by Myers [2] in 1915-1916, Bailey [3] in 1918, Southard [4] in 1917, Mott [5] in 1916 and the final report in the Army Medical Department, volume X,[6] in 1929 cover the problem in World War I and leave the reader definitely with the impression that the majority (95 per cent) of so-called "shell shock" cases showed no evidence of damage or changes in the central nervous system.

For example, in the report of the United States Army Medical Department [6] of 1,003 cases of so-called "shell shock" in a neurologic hospital only 10 showed any neurologic signs and were finally kept as brain concussion cases. The rest were termed war neuroses and were handled as such.

Mott reported some pathologic material found in men killed near explosions. Reading of his three papers, which, incidentally, have been misquoted in modern reviews, reveals that his main contention was that a man buried in a deep dugout by a shell blast could die from the carbon monoxide concentration in the enclosed space, and his lesions bear this out. He readily concedes that the majority were cases of acute hysteria—often in predisposed vulnerable personalities.

In this war, as a result of the intensive bombing and greater destructive power and size of the explosives used, the world blast concussion appeared in the medical literature in 1940. It was supposed, as in the first world war, that the effect from these gigantic bomb blasts would result in direct damage to the brain. Various articles have been published on this syndrome, and it is an accepted diagnostic term in both our army and our navy.

In this war, strangely enough, the same sort of clinical arguments and reports appeared. Preliminary and sketchy reports suggested that air blast could damage the human brain, such as the few cases of Abbott and Due [7] in 1943; but the careful, full reviews of Denny-Brown [8] and of Fulton [9] and the experimental work of Zuckerman [10] show that little if any evidence exists for brain damage and that careful microscopic studies fail to show that air blast in the open can harm the human nervous system.

Fabing [11] has published a careful report of over 80 cases of this syndrome in which he failed to find organic brain injury. His explanation of the symptom complex on Pavlovian terms of overstimulation of the cerebral cortex is a possible way to explain the syndrome.

This report deals with clinical observations on some 350 patients seen in the Pacific theater in 1944-1945 who were admitted to naval hospitals with a diagnosis of concussion: atmospheric cerebral.

The first large group of cases observed were in a naval hospital in the Hawaiian Islands to which over 100 cases bearing this diagnosis were admitted. The second group, consisting of 105 cases from Iwo Jima and the third group of 150 cases received during the Okinawan campaign were both seen at Guam. A smaller group of some 25 cases from the Bougainville campaign were examined in a hospital in the New Hebrides. I saw about a dozen patients with this diagnosis at the Chelsea Naval Hospital in 1943, having received their initial blast effect in the previous year on Guadalcanal.

Since all these patients had been exposed to the near blast of either bomb or shell explosions, it might be well at this point to describe the general effect of an air blast in the open and relate some personal observations about it.

I had an opportunity for some temporary duty on a heavy cruiser which was engaged in battle practice involving considerable use of 8 inch guns. It was possible to be stationed, since this was not a real battle condition, on the wing of the bridge some 20 feet from the 8 inch guns during broadside fire. In view of the damage to ear drums from such proximity to these discharges, careful application of cotton to the auditory canals was insured. The primary objective here was to note the pure blast effect and whether it would produce headache or other uncomfortable sequelae. There was no danger, of course, from such a position of being injured by any fragments. For the better part of a day and one evening I stood by the guns to observe the effect of these blasts, which, in spite of the cotton in the ears, was exceedingly unpleasant. The force of the air wave would push one about and tear open one's shirt. A pair of spectacles were blown off in one

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

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11. Fabing, Howard: Cerebral Blast Concussion in Soldiers, Arch. Neurol. & Psychiat., to be published.

of the blasts. The incandescent yellow flash when observed directly in the daytime rendered the eye temporarily blind for thirty to forty seconds. When observed once during the night, with the pupils dilated, temporary blindness lasted for about four and one-half minutes. No headache or any other somatic disturbances were noted. The intensity of the blast effect was calculated by an ordnance expert as being about the same as that of a 100 pound bomb or shell exploding at the same distance.

As a result of this observation it seemed unreasonable that the pure blast effect would injure the brain in the cases observed. The nature of the blast wave is such that in the open atmosphere the compression effect is rapidly dissipated, so that a few yards away from the exploding missile the crushing effect of the air pressure has diminished to a degree that prevents it from damaging a structure like the cranium. The compressing effects, however, if intense enough, could crush soft organs containing air or fluids. One would therefore suppose that, if the brain is damaged by such an effect, there must always be extensive damage to the lungs, viscera, blood vessels, eyeballs and sinuses. The ear drums, which respond to such pressure readily, would always be ruptured in such cases. Now this is not the case. In 90 per cent of these cases seen the ear drums

Comparison of Findings in Conditions Related to Air Blast Concussion

Findings	So-Called Air Blast Concussion	Battle Neurosis	Head Injury	True Air Blast Concussion
Headache	+	+	+	+
Tinnitus	+	+—	+	+
Hearing loss	0	0	0	+
Focal neurologic signs	0	0	+	+
Spinal fluid abnormality	0	0	+	+
Ruptured ear drums	0	0	0	+
Rupture of other viscera	0	0	0	+
Retrograde amnesia	0	0	+	+
Pentothal recoverable amnesia	+	+	0	0
Tremors + startle	+	+	0	0
Terror nightmares	+	+	0	0

were intact. In all but 3 of the cases observed there was no evidence of blast effect in the other organs previously mentioned. Furthermore, in the 3 cases just mentioned the blast did not occur in the open but took place in a confining space where the pressure effect could not be dissipated and which therefore might be expected to produce compression effects on the brain. The neurologic examinations in all 3 just mentioned were definitely abnormal.

On the other hand, in well over 300 cases bearing this diagnosis the neurologic examination was within normal limits, indicating no clinical evidence of cerebral damage. In a small group of 15 the spinal fluid was under normal pressure, free of red cells or increase in protein. In a larger series of 75 not seen by me but reported verbally by Lieutenant Commander Fogel of the U. S. S. *Bountiful* the spinal fluid was normal in all.

About 40 per cent of these men complained of a definite period of amnesia lasting anywhere from thirty minutes to thirty hours. It is this amnesia which has led many clinicians to the conclusion that there must be cerebral damage present. An analysis of this amnesia in this group of cases reveals the following: There was no retrograde amnesia in any of the cases. Retrograde amnesia is usually found in damage to the brain from skull injury. In fact, the amnesia usually reported began after the subject had heard the explosion and felt himself pushed down by its effect. In all cases in which the amnesia was explored by means of narcosynthesis (pentothal) or hypnosis restoration of the memory was possible.

It is interesting to note here that so-called narcosynthesis, described in great detail by Grinker [12] in 1944, was in effect reported in 1916 by Penhallow,[13] the patient being a soldier who lost his speech, sight and memory from a nearby shell explosion on the Western Front in July 1915. In October of that year in a hospital in Paris he was given ether, regained his speech and sight and relived in a loud voice his entire battle experience in a dramatic way before the examiner and filled in completely the three months old amnesia. Penhallow reported that the patient was quite well thereafter.

This is not considered characteristic of the amnesia found in cerebral damage. In many cases the amnesic material presented a serious panic state with complete loss of control, violent fear reactions and surrender to the flight impulse. Naturally, in well trained fighting men such behavior produces intense guilt and shame, so intense that unconscious burial by means of amnesia is the only way out. In a number of these cases exploration of the amnesia revealed a period of recall that ended shortly after an injection of morphine or barbiturates. This medication then produced a natural sleep which could not be further explored and certainly could not be explained by any means as a result of damage to the brain but rather the normal effects of strong sedation. Comparison of the findings in true air blast concussion, head injury, battle neuroses and so-called air blast concussion as shown in the accompanying table. It will be seen from this table that so-called air blast concussion almost parallels that of battle neurosis, whereas the true air blast concussion with real cerebral damage is similar to head injury. Some examples of illustrative cases will now be described.

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REPORT OF CASES

Case 1.—A pharmacist's mate aged 19 was brought into the hospital by airplane with a diagnosis of air blast concussion which occurred twelve hours before on Okinawa. He had been in the front lines administering to the wounded for six days. There were deprivation of sleep, inadequate food and water intake and extreme fatigue. He had been under heavy artillery and mortar fire most of the time. His past history was free of neurotic illnesses or previous breakdowns. The last thing he remembered was a shell exploding near him, and he woke up in the evacuation airplane four hours later. The neurologic examination was negative. There was startle, extreme anxiety, tremor of both hands and a tremulous speech. Under pentothal narcosis he relived his battle experience readily, and the following is the summary: A mortar blast nearby pushed him on top of a patient to whom he was trying to administer plasma and spoiled the procedure. He began to shake at the time violently. He dragged his patient into a foxhole and was unable to do any more first aid. The patient, he believed by that time, was dead. A sense of failure overwhelmed him. He heard a terrific explosion above the foxhole, and this was the beginning of the amnesia period. Under pentothal he remembered crawling out of the foxhole, screaming and crying, and trying to get up on his feet and run toward the aid station. He passed 2 other wounded or possibly dead marines during this struggle. Another corpsman aided him and put him into a tank or tractor and took him to the dressing station. He remembered being given some sedation, being wrapped in a blanket and put into an ambulance. He remembered crying and sobbing during the entire ambulance

12. Grinker, R. R., and Spiegel, J. P.: War Neuroses in North Africa: The Tunisian Campaign (Jan.-May 1943), New York, Josiah Macy Jr. Foundation, 1943.

13. Penhallow, D. P.: Case of a Soldier with Amnesia and Hysteria, Boston M. & S. J. **174**: 131 (Jan. 27) 1916.

trip to the air field. The intense guilt of this man's breakdown occurring at the time when he was thoroughly exhausted would cover the mechanism of the amnesia. There is no evidence whatever of damage to his brain, and recovery of the patient took place after three weeks, and he was returned to duty.

CASE 2.—A marine sergeant, after twelve days in the front lines at Iwo Jima under extremely heavy fighting, was in a trench when a large bomb or torpedo exploded nearby. He remembered being covered with black dust and hearing the noise of the explosion. An amnesia period lasted for sixteen hours following this. Under pentothal he recalled readily that he stayed in the foxhole, afraid to move, with the dust in his nose and mouth. He was picked up by a stretcher group and taken back to the beach, which was also under fire. On the landing vessel taking him to this ship he opened his eyes to witness the futile efforts of two corpsmen to save a man dying from a horrible wound of the throat, in spite of a doctor's attempt to get in a tracheotomy tube. The retelling of this part of the episode brought out tremendous agitation, anxiety and hyperventilation. The man was much improved after the clearance of his amnesia with rest and sedation and probably was able to go back to noncombat duty after he left the hospital. There is certainly no evidence of an organic cerebral lesion here.

CASE 3.—A medical officer during an aerial bombardment was walking down the corridor of an LST when a 200 pound bomb exploded in the adjoining passage, spraying an area with fragments 2 feet in front of him. He was knocked down and was unconscious for a few minutes. He had no recollection of the blast or of the fragments hitting the wall in front of him. The last thing he remembered was leaving his cabin to go to his battle station. He showed bilaterally ruptured ear drums, loss of hearing, which was partially permanent, bleeding from the nose, moderate bleeding from the lungs, some bleeding from the intestinal tract, bilateral retinal hemorrhages, which cleared up, and a definite weak left leg with a Babinski reflex. He did not have the startle, tremor and anxiety or other symptoms previously described in the other cases. There were a number of red cells in his spinal fluid. All these signs except the hearing loss disappeared, and he was able to return to duty three months later. This is 1 of the 3 cases in which a true air blast concussion was encountered and occurred in a confined space where air pressure could be built up.

CASE 4.—A soldier, running across an open space between two hills in the front line, was thrown by a blast of a small mortar shell against a tree, striking his helmet so violently that it produced a large dent in it on the left side. He was dizzy for a minute and had a sharp tingling in his right foot. He did not lose consciousness. When admitted to the hospital he had a large scalp hematoma, weakness of his right leg, which cleared up in a couple of hours, and persistent left sided headaches which kept him on the sick list for some time and eventually caused his evacuation to the United States. This man undoubtedly had a cerebral injury produced by crashing into the tree and not considered as a blast at all.

CASE 5.—There is a case of reported blast concussion which Lieut. Comdr. Ira Hardy told me of which an investigation gave the following history: A marine sergeant was wounded painfully in the leg but subsequently returned to the firing line on Iwo Jima. He was obviously unstrung and stayed in a foxhole, gradually recovering his poise in the bombardment. While standing with his hands on his hip a Japanese 6 inch shell went between his left arm and body, not even cutting his clothes; it failed to explode. The patient, uninjured, fell to the ground and had an amnesia for two hours. Here we have a pure fright giving all the symptoms with no concussion possible.

CASE 6.—A second lieutenant marine aged 27, who was brought into the hospital on Guam by air from Iwo Jima, was diagnosed as having blast concussion. When interviewed he stated that he thought the diagnosis was in error and gave the following story: He had always been susceptible to seasickness and motion sickness all his life. Outside of that there was no history of any form of nervousness. He did well, and there was no trouble until on his transport he was chronically seasick for two and one-half months while the transport was on its way to the invasion. He lost 35 pounds (16 Kg.) but did not turn in on the sick list. On the landing boat going into the beach he was again violently seasick, and in his mind was the hope of being on firm ground in a few minutes. He had no anxiety of the danger of battle. On reaching the beach he stumbled down the ramp and fell on the sand. This sensation of being on solid ground and not moving around for the first time in two and one-half months was so delightful that for a moment he lay there enjoying it and then started to get up to join his company. At that point two hospital corpsmen grabbed hold of him and put him on a stretcher and carried him back on the boat, which was jouncing on the surf, bringing on seasickness. Since no physical injury was found, the patient was evacuated by air with the diagnosis of blast concussion, and it was quite obvious that his only complaint was seasickness; so he was returned to his outfit after two weeks' rest and food and continued the remainder of the battle of Iwo Jima without trouble.

CONCLUSION

It is felt that the majority—over 90 per cent of the so-called air blast concussion cases—are extreme hysterical-anxiety states produced in men who have been exhausted or otherwise sensitized to this form of trauma. There is no evidence from the observations that I made in these cases of damage to the brain or nervous system. A diagnosis of air blast concussion in these cases places the men in a surgical category that is not justified by the facts and deprives them of important prompt psychotherapy. It is regetted that no facilities for electroencephalographic recordings were available for this study.

TREATMENT OF HEADACHE WITH INTRAVENOUS SODIUM NICOTINATE

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The successful use of oral or parenteral nicotinic acid in the treatment of certain special types of cephalalgia, such as migraine, malarial headache or sinus headache, has been reported within recent years. Although these studies were very promising, they were of necessity limited in scope. For this reason it was decided to investigate the effect of sodium nicotinate on a sufficiently large series of headaches regardless of etiology, and to determine if possible what types are suitable for vasodilator therapy.

MATERIALS AND METHODS

In our experiments sodium nicotinate was used except in a few instances in which niacin was substituted.[1] The intravenous route of administration was chosen for precision and the decisiveness of the clinical effect; 100 mg. of nicotinic acid or its equivalent as the sodium salt was taken as the standard dose because this amount was found adequate to produce a flush in almost every case. One hundred consecutive headaches were treated at City Hospital, Welfare Island, over a period of months; an attempt was made to exclude all neurotic or hypersensitive persons for obvious reasons. In 13 additional cases an intravenous injection of nicotinamide (100 mg.) was given, and some of this group received

From the New York City Hospital, Welfare Island, Department of Hospitals, New York 17.

1. The sodium nicotinate ("Naotin") used in this investigation was supplied through the courtesy of Mr. J. H. Moss of the Drug Products Company, Inc.

the usual intravenous dose of sodium nicotinate twenty to thirty minutes later. Every attempt was made to minimize psychologic factors: often it was possible to give the injection without the patient being aware of the reason for this procedure. With the appearance of flush and other symptoms, a number of routine questions were asked, among them whether there was any amelioration of the headache. Subsequently the patient was questioned as to the nature and duration of the original headache, its cause if determinable, any previous history of cephalalgia, and the effects of the nicotinate therapy in detail. Follow-up at six to twelve hours and again at twenty-four hours was possible in nearly every case.

FINDINGS

The results of therapy in 100 cases are presented in the table.

The following 2 cases will serve to illustrate the rather dramatic effects of intravenous sodium nicotinate:

REPORT OF CASES

CASE 1.—A. R. had suffered with typical migraine for a number of years. The characteristic family history, the aura and scotomas were all present. Four consecutive attacks, all

Results of Treatment in 100 Cases

Type or Probable Cause of Headache	Number	Complete Relief	Recurrence			
			As Before	Moderated	Minimal	Failed
Migraine (typical)	9	8	1*	..	..	..
Spinal tap	13	13	..	..	..	..
Air encephalogram	2	..	..	..	2	..
Hypertensive	6	5	..	..	1	..
Sinus	4	3	..	1	..	..
Premenstrual	2	2	..	..	..	..
Postoperative	2	1	..	1	..	..
Post-traumatic	2	1	..	..	1	..
"Hangover"	1	..	..	1	..	..
Meningitis (syphilitic)	1	..	..	..	..	1
Endocarditis (emboli ?)	1	..	..	..	..	1
Idiopathic	57	42	3	6	5	1
Total	100	75	4	9	9	3

* See text.

severe, were treated at various intervals after onset with sodium nicotinate intravenously. In each instance there was a prompt flush and with it complete disappearance of the migraine. There was no recurrence. On a fifth occasion this patient had cephalalgia not of the migraine type but presumably due to overwork and weariness. In this instance also an intravenous injection relieved the headache in less than one minute. Subsequent to these injections the patient was given definitive therapy for his migraine with excellent results.

CASE 2.—A young Negro was undergoing diagnostic air encephalography. After 20 cc. of air had been injected into the spinal canal in the usual way a headache developed so severe that the patient refused to cooperate further and threatened to discontinue the procedure by main force. With the patient still in position, 100 mg. of niacin was injected intravenously. The headache disappeared entirely while the needle was still in the vein, and encephalography was completed uneventfully. On the following day the patient awakened with a slight "soreness" of the head, but this was of such a mild nature as to require no further medication.

COMMENT

1. *Reaction to Injection.*—In the average case from thirty to forty-five seconds elapsed before the patient was aware of any effects. Questioning revealed that in the majority of cases a sensation of heat in the genitalia was the first sign noted. Immediately thereafter a throbbing in the vertex or burning of the head and neck with concomitant flushing appeared. Together with the heat there was commonly a feeling of restlessness and oppression; in some females apprehension could be observed for a few moments. As the effect reached its maximum there appeared paresthesias such as itching or pins and needles. Within three or four minutes the patient, though not comfortable, became accustomed to the heat, which gradually subsided in about fifteen minutes and usually disappeared in twenty minutes to a half hour. In 2 cases mild abdominal cramps were observed. In 1 case (with a suspected pathologic condition of the stomach) vomiting occurred, and 1 patient who had migraine vomited forty-five minutes after the injection, whereupon the headache recurred. Considering the time interval it is not certain that the sodium nicotinate was responsible for the vomiting in this instance. By far the greatest number of patients were immensely relieved by the therapy despite its manifest discomforts, and many repeatedly sought the "heat treatment" for subsequent headaches. A minority—invariably those with headaches of lesser severity—objected to the treatment and a few said that the treatment was worse than the headache. Certain patients showed a greater response to the standard dose than did the average individual. On the other hand, some showed little or no response to the injection and in these relief was not obtained. The blood pressure was followed in approximately 30 patients but no significant or consistent changes were noticed and this procedure was discontinued.

2. *Results.*—The individual groups that have been tabulated are in general far too small to permit statistical conclusions. The excellent results obtained in the treatment of migraine both as to rapidity and as to duration of effect require little comment. In every case complete relief was obtained within two minutes; the nature of the single recurrence has been discussed elsewhere. The rarity of side reactions is of interest in comparison to the customary use of ergotamine tartrate in migraine. In the treatment of headache following spinal tap, sodium nicotinate has given better results than the drugs commonly employed. In all 13 cases complete relief was obtained within a few minutes. No recurrence of the headache appeared in any instance. In 2 cases there was minor "soreness" of the head on the following day. In 1 case, for purely experimental purposes, an injection of 100 mg. (not included in the table) was given twenty-four hours after the first injection, with relief of the soreness. Hypertensive patients required larger doses to produce adequate flush; this is most probably coincidental. The results were not as dramatic as usual in 3 of these cases, and in 1 there was a recurrence of moderate intensity. With the presence of organic meningeal involvement (as in syphilitic meningitis) it is not to be expected that a vasodilator would be particularly effective; our findings bear this out. Of the group of idiopathic headaches 74 per cent were completely relieved. There was 1 total failure; in 3 the headache recurred unmodified shortly after treatment, and in 6 more benefit was of short duration.

3. *Controls.*—For purposes of control, injections of 100 mg. of nicotinamide were utilized in 13 cases. One patient with an idiopathic headache stated that he felt somewhat relieved; 2 patients believed that there was possibly some improvement; 10 noted no change. In 5 of this group a second injection of sodium nicotinate

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was given subsequently. The patient who had experienced some relief from the amide developed a good flush but his headache did not change further. The headache of the other 4 patients disappeared completely without recurrence. There is no doubt, however, that even with every precaution there is a certain psychogenic factor involved in treating a complaint as subjective as headache with intravenous injections.

SUMMARY AND CONCLUSIONS

1. The effect of intravenous sodium nicotinate was studied in 100 consecutive patients with severe headache. Seventy-five were completely relieved.

2. The relief of headache appears to be correlated with the degree of peripheral flush.

3. Intravenous sodium nicotinate is recommended in the symptomatic treatment of (*a*) severe idiopathic headache, (*b*) migraine and (*c*) postspinal tap cephalalgia.

Clinical Notes, Suggestions and New Instruments

FRONTAL OSTEOMYELITIS WITH SUBDURAL ABSCESS AND HEMIPLEGIA AFTER FRONTAL SINUSITIS

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A case of acute frontal osteomyelitis with subdural abscess was reported as cured by A. R. Dingley.[1] He concluded that it is uncommon for a subdural abscess to be the sole intracranial complication of an acute frontal osteomyelitis. Dr. J. Lewis Dill [2] reported that one is impressed with the rarity of osteomyelitis of the frontal bone, especially after perusal of the recent literature. A. E. Bulson Jr.[3] was able to find only 55 cases in a complete review of the literature for the thirty years previous to 1925. Furstenberg [4] found a total of 73 cases of osteomyelitis of the cranial vault up to that date. He reported 14 cases which he himself had observed at the University Hospital. In this group there were 8 recoveries and 6 deaths. Gustave B. Fred,[5] in a review of 40 cases of acute fulminating osteomyelitis of the frontal bone occurring in the wards of the Massachusetts Eye and Ear Infirmary during ten years, noted that it complicated acute frontal sinusitis and frequently followed swimming and diving and was marked by profound toxicity. Its earliest and most characteristic sign is pitting doughy edema of the forehead. The disease is often fatal, usually terminating in brain abscess or meningitis.

REPORT OF CASE

L. L., a woman aged 28, single, admitted to the Mary Immaculate Hospital on May 16, 1945 with the diagnosis of osteomyelitis of the frontal bone, ruptured ethmoid and frontal sinus and pansinusitis, stated that the illness started with a "small blind pimple," which she picked. The next day she noticed swelling and complained of headache. She treated the eye swelling with warm applications. The swelling of the eyes and the face subsided. She was up and about and felt well. She was seen on May 15 by Dr. T. J. Adams. Her temperature was 101 F. She complained of a headache and pains over the eyes. At this time she was given sulfadiazine 1 Gm. every four hours. The temperature was up to 103 F. the next day. She was semicomatose, and a pitting doughy edema of the forehead was noted between the eyes.

A history of massive nasal polypi for the past ten years was obtained with recurrence since an operation. Polypi filled the entire nasal cavity. The patient had poliomyelitis in 1936 but developed no paralysis. She had no other illness. Her mother and father were living and well.

The head showed a pitting doughy edema between the eyes, which was tender and soft. The pupils were equal and reacted normally to light. The tongue was moist and was coated. The nose was filled with numerous polypi, varying in size from a pea to a hickory nut. Both nares were involved and some seemed to extend from the ethmoidal region. The forehead showed tenderness on pressure over both inner canthi.

The heart rate was 100 and regular with good tone. No murmurs were present. Her chest was clear and resonant except for some fine rales at both bases. The abdomen was soft and not tender. On May 16 Dr. Adams found her comatose, stuporous and irrational.

On this day I found the patient stuporous, with a temperature of 102 F., pulse rate 88 and respiratory rate 21. My tentative diagnosis was an acute osteomyelitis of the frontal bone and ruptured ethmoid and frontal sinuses, in addition to a pansinusitis. Immediate surgical intervention was urged. An x-ray was taken, and the film showed a pansinusitis with a clouding throughout. There was considerable obliteration of the supraorbital ridge on the right side, just below the frontal sinus. On the left side there was a similar process but to a lesser degree.

Dr. D. S. Cunning saw the patient on May 16 at 5:30 p. m. and felt that a cavernous sinus thrombosis should be ruled out in view of the history of "picking a pimple." On the same day a radical frontal Killian bilateral sinusotomy was done by Dr. Cunning and myself. An incision was made over the supraorbital ridge down to the bone extending over the bridge of the nose to the opposite supraorbital ridge. Both eyes were pushed downward. Immediately on retracting the skin we noted an area of necrosis with an opening about the size of a 50 cent piece (30 mm.) in the frontal bone over the nasal bridge. There exuded free pus throughout. Both frontal cavities were filled with polypi and free pus. An area of the overlying dura of the brain in the region of both frontal lobe tips was exposed and this showed injection. This dura was not disturbed. Necrotic bone was thoroughly cleaned away until healthy bone was exposed on both sides. The sinus cavities were well cleaned of débris and necrotic bone and the wound was left open. Numerous polypi were removed from both nares to favor drainage. Owing to the extensive osteomyelitis it was thought better to permit free drainage; consequently no suturing of any kind was attempted. Sulfathiazole and sulfanilamide powder were placed in the wound. A dressing was applied.

A spinal tap done at this time showed the fluid to be clear, under no excessive pressure, with no evidence of cloudiness.

Laboratory examination on May 16 revealed that the spinal fluid showed no growth on culture. The pus from the bone and sinus showed Staphylococcus albus and a nonhemolytic streptococcus. The urine showed no abnormality but the blood showed 3,430,000 red cells, hemoglobin 70 per cent, leukocytes 12,450, 88 per cent polymorphonuclears and 12 per cent lymphocytes.

On May 16 20,000 units of penicillin every three hours and 1,000 cc. of 5 per cent glucose in isotonic solution of sodium chloride were given slowly intravenously with 75 Gm. of sulfadiazine in the form of a 5 per cent solution.

When the dressing was changed on May 18 the left arm and left leg showed a hemiplegia. Dr. Jefferson Browder noted on this day that the patient had had evidence of frontal osteomyelitis for many months, also polypi and pansinusitis for several years. The first evidence of intracranial invasion came on May 16, when she became drowsy and later stuporous. The frontal sinus opened that night and the patient became more alert the next morning. During the afternoon of May 17, weakness of the extremities on the left side was noted. Since then the patient had been stuporous but not entirely out of contact with her surroundings. She was more drowsy than on the day before but not quite as drowsy as she was on entering the hospital. Mild blurring of the nasal border of the nerve head was seen. The neck was moderately rigid. The abdominal

1. Dingley, A. R.: Acute Frontal Osteomyelitis with Subdural Abscess, J. Laryng. & Otol. **57**: 450-453 (Oct.) 1942.
2. Dill, J. L.: Osteomyelitis of the Frontal Bone, Laryngoscope **52**: 267-274 (April) 1942.
3. Bulson, A. E., Jr.: Osteomyelitis of the Frontal Bone as a Complication of Frontal Sinusitis, J. A. M. A. **86**: 246-250 (Jan. 23) 1926.
4. Furstenberg, A. H.: Osteomyelitis of Skull; Osteogenetic Processes in Repair of Cranial Defects, Ann. Otol., Rhin. & Laryng. **40**: 996-1012 (Dec.) 1941.
5. Fred, G. B.: Acute Fulminating Osteomyelitis of Frontal Bone: Review and Prediction, Ann. Otol., Rhin. & Laryng. **51**: 638-647 (Sept.) 1942.

reflexes were not elicited. Paralysis of the left upper and paresis of the left lower extremities were present. A bilateral Babinski was demonstrable. Deep reflexes were exaggerated on the left side. It was three days now since onset of evidence of intracranial invasion, possibly a suppurative encephalitis with cerebral cortical thrombophlebitis. The chances for a well

Fig. 1.—Appearance of patient on June 4, 1945, eighteen days after bilateral radical frontal operation, twelve days after trephine drainage of subdural abscess and four days after secondary reopening of wound and reestablishment of drainage through previously closed trephine wound.

walled off collection of pus were not very good. Dr. Browder advised caffeine with sodium benzoate 3¼ grains (0.25 Gm.) every four hours for six to eight doses, 500 cc. of blood, continued chemotherapy and penicillin, with use of the stomach tube, 2,500 cc. of fluids being given every twenty-four hours.

After the first dose of caffeine the patient went into a convulsion and the caffeine medication was stopped. A suction machine was required beside the patient's bed with oxygen at all times because the mucus would accumulate and embarrass her respiration. The patient was still stuporous and the prognosis was obviously grave. She became gradually worse and on May 21 Dr. Frank Mazzola, attending physician in medicine, was also of the opinion that intracranial suppuration existed, and surgical intervention was indicated to rule out a subdural abscess pressing on the motor area and causing the hemiplegia.

With this in mind Dr. Browder was again called and on May 22 at 9 p. m. a frontal trephine of the skull was done posterior to the original site, through apparently healthy bone. The scalp and the right frontal region were shaved just above the right eye for an area of about 2 inches. A 3 inch vertical incision was made through the scalp, extending down to the skull. The scalp was retracted and the bleeding checked. The bone was entered with a Hudson burr, and as the burr went into this area of bone considerable free pus exuded. At first it was thought that it came from the dura but this was later noted to be due to an osteomyelitis of the skull. When the burr reached the dura, the dura was found red but no bulging was present. A rongeur was used to widen the bone opening toward the region of the orbit. The dura was opened with a knife. There was an immediate gush of about 12 ounces (350 cc.) of thick creamy pus, a culture of which was taken and found to be sterile. Saline solution was used to irrigate the subdural cavity. When suction was again applied, more pus appeared. The region of the frontal lobe of the brain and the lateral wall and posterior wall of this subdural area was explored. There was noted a whitish membrane in this zone of the brain as far as could be visualized. The electric cautery was used for the dural edges and the scalp was closed with silk. Before so doing, 100,000 units of penicillin was injected into this cavity. Dr. Browder noted that the policy of closing a cavity of this type with penicillin injected into it had been used successfully by him at Kings County Hospital. I deferred to Dr. Browder's wider experience and injected the penicillin, and the wound was closed.

Twenty thousand units of penicillin was given intramuscularly every three hours every day from May 16 in addition to the local injection of 50,000 units of penicillin daily into the dural cavity and the frontal sinuses until May 30. As of this date the patient received a total of 3,575,000 units of penicillin by injection into the subdural space, muscle and subcutaneously.

On the morning of May 30 I came to the hospital and dressed the patient's wound and observed that she was obviously very sick. I then left for the street. A subconscious thought directed me back to the bedside of the patient. I removed the dressing and with a pair of scissors and scalpel and without anesthesia I opened the previously closed trephine wound. Immediately there was a discharge of ½ ounce (15 cc.) of dark colored blood and pus. Massive doses of penicillin were started. For example, 200,000 units of penicillin was injected into the buttocks, 100,000 units into the dural cavity and 100,000 units into the sinus cavity.

The next day when the wound was dressed the patient showed so much improvement that she was able to speak coherently

Fig. 2.—Appearance of patient four months after discharge.

and the left sided hemiplegia started to improve. The massive doses of penicillin were continued until June 12. The dose was then diminished to 40,000 units daily with an injection confined to the local sinus cavity. As noted, the patient received 3,575,000 units of penicillin up to May 30. Then the massive dosage was started and continued to June 13. The total amount for the

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latter period was 7,260,000 units. The dosage was then cut in a gradual fashion so that a total of 600,000 units was administered from June 13 to the time of discharge. A total of 11,435,000 units of penicillin was administered to the patient.

On June 1 her general condition was very much improved. Her temperature was normal, the pulse regular and of good strong quality and her breathing normal. From June 2 to June 10 her condition was obviously improving. An x-ray revealed no progressive osteomyelitis. The bony margins of the operative sites were well defined and sharp, indicating that the osteomyelitis had arrested itself. The superior ridge of the left orbit was likewise sharper and more distinct, indicating a similar arrest. The dose of penicillin was decreased and on June 27 she was discharged with the final diagnosis of record of an acute frontal osteomyelitis, ruptured ethmoid and frontal sinuses, subdural brain abscess and left sided hemiplegia.

The urine showed 3 plus albumin at the height of the infection, and this rapidly diminished to give negative findings.

A leukocytosis of 12,450 increased to 16,450 on May 28, confirmed at 17,150 the next day. A dramatic drop to 7,400 occurred on the day following the secondary opening of the trephine site on June 2.

Dr. Browder saw the patient on June 26 and noted that the patient was well oriented, fully cooperative and intellectually seemed normal. The midpart of the right frontal surgical scar bulged slightly. The scar of the supraorbital region (sinus operation) was healing. The right optic nerve head was still blurred but the left had almost completely cleared. There was a complete left hemianopsia and also a slight paresis of the left side involving the face and the upper and lower extremities. Babinski's sign was not present, nor were the abdominal reflexes altered.

On June 26 an examination by Dr. W. G. Frey revealed that the patient was complaining of diplopia, which was diminishing. The diplopia was due to a 10 prism diopter degree of right hyperphoria which she overcame quite easily. It was his impression that this would gradually diminish.

At present the patient has no paralysis and no complaints and the accompanying photographs during convalescence and recovery demonstrate the changing status.

COMMENT

The patient is indeed fortunate if the localizing type of lesion occurs and a diagnosis is established already. One of the cardinal signs in the diagnosis is pitting doughy edema of the forehead. It is the first and the most reliable sign of osteomyelitis of the frontal bone.

Dr. Fred divided the 40 cases admitted to the Massachusetts Eye and Ear Infirmary between 1931 and 1941 into two five year groups. From 1931 to 1936 there were 12 patients, of whom 6 died, a mortality of 50 per cent. From 1936 to 1941 there were 28 patients with 6 deaths, a mortality of 21.4 per cent. The mortality for the 40 patients was 30 per cent. The mortality of 50 per cent in the first five year group was due, Dr. Fred feels, to the delayed and inadequate surgery. The mortality 21.4 per cent in the latter five year period was due to early radical removal of the entire frontal bone in most of the operative cases. Dr. Fred noted that all patients with osteomyelitis of the anterior wall of the frontal sinus recovered. In Dr. Fred's cases only 1 case of subdural abscess as the sole complication of acute frontal osteomyelitis was found.

The subdural localization seems to originate as a result of direct extension from the suppurative osteomyelitis and may be favored by a more pronounced fixation of the dura to the underlying bone.

The involvement of the bone seems to occur by direct extension from the frontal sinus after necrosis of the mucous membrane has taken place. The general pathology of osteomyelitis as it occurs in a flat bone seems to apply in its localization in the cortical layers and diploe of the frontal bone.

CONCLUSION

The inadequacy of chemotherapy and penicillin therapy seems to be borne out by the course this particular case pursued. The importance of adequate surgical measures, to include wide removal of involved bone, and adequate drainage is apparent.

89-21 153d Street.

GASTROSCOPY IN ACUTE AND CHRONIC HEPATITIS

LIEUTENANT COLONEL JOSEPH BANK
and
CAPTAIN CHARLES H. DIXON
Medical Corps, Army of the United States

Recently in THE JOURNAL there appeared a report on gastroscopic observations of patients with infectious hepatitis.[1]

During the past two and one-half years we had occasion to employ gastroscopy in the course of diagnostic studies of some cases of chronic hepatitis because of gastric symptoms. For comparison, a number of cases of acute hepatitis were examined. A total of 43 cases of acute and chronic hepatitis were thus examined by gastroscopy. There were 23 cases of acute hepatitis and 20 of chronic hepatitis. In no case did gastric symptoms exist prior to the onset of hepatitis. X-ray examinations of stomach, duodenum and gallbladder were negative in all.

ACUTE HEPATITIS

The acute cases were diagnosed on the basis of characteristic clinical picture, enlarged and tender liver and jaundice. In the chronic cases there was obtained a history of previous attacks of acute hepatitis with persistent or recurrent symptoms of hepatitis, enlargement and tenderness of the liver and in some cases positive liver function studies. Gastroscopies were done at various stages of the disease. In the acute hepatitis group of 23 cases there were 18 of the infectious hepatitis type, and 5 followed the administration of blood plasma within three to four months. The duration of hepatitis at the time

TABLE 1.—*Duration of Hepatitis in Twenty-Three Acute Cases*

1-7 Days	8-21 Days	21-35 Days	2 Mos.	3 Mos.	4 Mos.	5 Mos.
5	3	10	1	1	1	2

TABLE 2.—*Duration of Hepatitis in Twenty Chronic Cases*

7 Mos.	1 Year	2 Years	2½ Years	3 Years	7 Years
1	6	5	2	5	1

of gastroscopy varied from two days to five months (table 1). Jaundice and elevated serum bilirubin were present in all but 5 of the patients at the time of examination. Digestive symptoms, liver enlargement and tenderness were present in all cases. The cephalin flocculation was 3 or 4 plus in 14 cases, 2 plus in 5 cases and negative in 4 cases. Other liver function studies done at the time of gastroscopy, including hippuric acid, qualitative urobilinogen and albumin-globulin determination, were within normal limits. Gastroscopy was within normal limits in all but 2 cases. These 2 showed moderate superficial erosions of the body of stomach, which were not considered sufficiently significant to account for the patients' symptoms.

CHRONIC HEPATITIS

Gastroscopy was done in 20 cases of chronic hepatitis. Thirteen cases followed acute infectious hepatitis, and 7 were postvaccinal. The duration since the initial jaundice varied from seven months to three years (table 2). While many of the patients had previous episodes of recurrent jaundice, only 2 had evidence of jaundice at the time of gastroscopy. In these 2 the icterus index was in the upper limits of normal. Fifteen of the patients had symptoms of hepatitis, and the remaining 5 were not active cases, being under observation only because of enlargement and tenderness of the liver, with a previous history of acute hepatitis. The sulfobromophthalein liver function test was abnormal in 6 cases (15 per cent or more retention at thirty minutes with a 5 mg. dose). Other liver function studies were within normal limits. Four patients showed a mild superficial gastritis in the body of stomach, consisting only of superficial erosions. The remainder were entirely normal.

SUMMARY AND CONCLUSIONS

1. Gastroscopy of the gastric mucosa in 43 cases of acute and chronic hepatitis did not reveal significant evidence of gastritis.

2. The minimal findings observed in some patients were not considered contributory to the patient's gastrointestinal symptoms.

1. Knight, W. A., and Cogwell, R. C.: Preliminary Observations of the Gastric Mucosa in Patients with Infectious Hepatitis, J. A. M. A. **128**: 803 (July 14) 1945.

Council on Pharmacy and Chemistry

The Council has authorized publication of the following statements. AUSTIN SMITH, M.D., *Secretary.*

MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council convened at 10 a. m., Dec. 15, 1945, at the Palmer House, Dr. Sollmann, Chairman, presiding. The following members were present: Drs. David P. Barr, S. W. Clausen, E. M. K. Geiling, Robert P. Herwick, James P. Leake, Perrin H. Long, G. W. McCoy, E. M. Nelson, W. W. Palmer, Elmer L. Sevringhaus, Austin Smith, Torald Sollmann and Isaac Starr.

In addition to officers and members of the American Medical Association headquarters staff there were present Dr. Milton Veldee, Director, Biologics Division, National Institute of Health; Dr. Walton Van Winkle Jr. of the Food and Drug Administration; Dr. Donald A. Wallace, Secretary of the Council on Dental Therapeutics; Mr. Edward M. Burke, attorney at law, Chicago, and Dr. Harold C. Lueth, formerly A. M. A. liaison officer of the Surgeon General's Office.

The following is an abstracted report of some of the more important discussions and actions:

Storage Requirements for Oxophenarsine Hydrochloride and Dichlorophenarsine Hydrochloride.—Dr. Veldee reported the findings of the National Institute of Health following tests on and observations of these compounds and asserted that dichlorophenarsine hydrochloride is a stable compound and that oxophenarsine hydrochloride is now more stable because of improved manufacturing technics. Following considerable discussion it was agreed that the temperature requirements suggested by the Council (THE JOURNAL, May 5, 1945, p. 29) could be dropped in view of the improvements that have been made in the manufacture of these compounds.

The general problem of temperature control for the storage of unstable drugs was reviewed. It was agreed that for compounds which definitely require refrigeration to ensure stability, and for unstable preparations in need of temperature control, reasonable label statements relating to storage and refrigeration temperature should be required. This was adopted as a general policy of the Council.

Acceptance of Drugs for Manufacturing Use.—The Council voted to consider for inclusion in N. N. R. drugs which are made available for manufacturing use. It was felt that manufacturers of the basic material should have opportunity to present their products for consideration by a body such as the Council. Heretofore the Council has limited its considerations to drugs for wholesale and retail merchandising. It was agreed that products which are covered by standards in official compendiums will not be included in this consideration, since standards are already available. Favorable consideration of drugs for manufacturing use by the Council does not permit purchasers of these materials to promote their finished products with claims for or reference to Council acceptance unless the finished items have been examined and also found acceptable by the Council.

Standards for Clinical Thermometers.—There is an urgent need for setting of standards for clinical thermometers: many are of poor construction, there is a wide variation in the temperature readings, poor dyes have been used on the markings, misleading statements appear in the promotional material and the name of the manufacturer may be missing. In view of the existence of such problems the Council recognizes the need for standards by which all clinical thermometers should be judged to determine whether or not they are satisfactory for clinical use.

The Council moved that a memorandum be sent to the Council on Physical Medicine urging that this body study the problem with a view to setting satisfactory standards for the testing of clinical thermometers. Attention was called to the fact that there are also other devices which might be given consideration in the setting up of standards which would provide further uniformity of production and betterment of products. The Council on Pharmacy and Chemistry is willing to lend whatever aid it can to the Council on Physical Medicine when it considers the standardization of clinical thermometers.

Committee on Therapeutic Research.—The Committee's policies were reviewed, and it was agreed that attention should be directed by publication in THE JOURNAL to the Committee's earlier decision (annual meeting, 1945) to make available larger sums of money than have been customary, subject to consideration of the individual request, and to grant an extension of the expiration period of research beyond one year when such action seems indicated. With the returning medical men it is anticipated that the number of requests for grants will be appreciably increased.

Report on Thiouracil.—Thiouracil has been subjected to considerable experimental investigation, but concerning its usefulness and toxicity there exists much confusion. Following a cooperative survey by the Food and Drug Administration and six manufacturers it was agreed that the drug had a certain field of usefulness and that in spite of certain toxic properties it was suitable for release in interstate commerce. The Council recognizes the urgent need for immediate dissemination of information on this subject. At the last meeting on thiouracil of representatives of industry and of the Food and Drug Administration it was suggested that these two groups make a report to the Council for publication in THE JOURNAL. This report appeared in THE JOURNAL, Feb. 9, 1946, page 343.

Therapeutic Trials Committee.—A report was made to the Council on a meeting in New York of members of the Therapeutic Trials Committee and representatives of several Eastern medical schools engaged in medical research. The object of the meeting was to provide opportunity for additional clinical investigators to comment on the Committee's objectives and the criteria for operation which it has tentatively adopted. It was apparent that many research workers are interested in fundamental or basic research and want freedom to pursue such investigations.

The Metric System.—A report was made to the Council concerning a meeting in Washington of several Council members, Dr. E. Fullerton Cook of the U. S. P. Revision Committee, Drs. Justin Powers and Robert Fischelis, respectively editor for and secretary of the American Pharmaceutical Association, and representatives of the Food and Drug Administration. This meeting was to discuss the promotion and use of the metric system. Agreements concerning equivalents and prominence in print were reached, and soon a joint statement by these bodies will be issued and given widespread circulation and publicity.

Spanish Translation of N. N. R.—So far there has been little success in providing a Spanish translation of New and Nonofficial Remedies. However, several manufacturers have expressed an interest in a cooperative project, and the Council instructed the Secretary to determine the attitude of the Board of Trustees and of industry, in general, of providing ways and means for publishing cooperatively (i. e. Council and industry) a Spanish translation.

Therapeutic Conferences.—The Council voted to explore the possibilities of sponsoring conferences on new therapeutic measures, the first to be held at the coming annual meeting of the Congress on Industrial Health (which is sponsored by the Council on Industrial Health), with emphasis being placed on the industrial side. From this experience it can be determined whether further conferences, symposiums or congresses should be held and under what circumstances. A number of educational leaders have stated that there is a real need for such Council activity and that if it is properly arranged it will be continuously successful. A committee was appointed by the Chairman to assist the Secretary in this matter.

Revision of Council Rules.—Much of the time of the meeting was devoted to detailed consideration of the Council's rules, with a view to necessary and desirable revisions. A comprehensive revision was arrived at, will be published in THE JOURNAL and will be made available in booklet form.

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MEDICAL LICENSURE STATISTICS FOR 1945

FORTY-FOURTH ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Victor Johnson, M.D., Secretary, and Anne Tipner

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This forty-fourth annual compilation of medical licensure and allied statistics by the Council on Medical Education and Hospitals covers the calendar year 1945 and includes data regarding (*a*) medical examining and licensing boards of the United States, the District of Columbia, the territories and possessions of the United States, (*b*) boards of examiners in the basic sciences, (*c*) the National Board of Medical Examiners and (*d*) examining boards in the medical specialties.

The official reports which form the basis for these compilations have been contributed throughout the year by the medical licensing boards of all the states, Alaska, Hawaii, Puerto Rico and the Virgin Islands; the eighteen boards of examiners in the basic sciences; the fifteen approved examining boards in the medical specialties; the National Board of Medical Examiners, and the homeopathic medical licensing boards of Connecticut, Delaware and Maryland. The homeopathic and eclectic examining boards in Arkansas and the homeopathic board in Louisiana did not examine or license any one during the year. No physicians were registered for civilian practice in the Canal Zone.

The cooperation of the officers of the foregoing boards in making possible the vast amount of reliable information presented in the following pages has been invaluable. The Council and THE JOURNAL express their appreciation to those who have supplied these data and for other records furnished throughout the year to the office of the Council.

The tables referring to medical licensing boards include figures for the number of candidates examined for medical licensure in 1945, the numbers licensed and those who have secured their first medical license and therefore represent additions to the medical profession. The state boards are discussed first, followed by the basic science boards, the National Board of Medical Examiners and the examining boards in the medical specialties.

STATE BOARDS OF MEDICAL EXAMINERS

LICENSES ISSUED

During the year 1945 there were 9,153 licenses to practice medicine and surgery issued by the medical examining boards of the forty-eight states, the District of Columbia, Alaska, Hawaii, Puerto Rico and the Virgin Islands, as shown in table 1. Of these licenses 5,541 were issued after examination and 3,612 by reciprocity and endorsement of other state licenses or of the certificate of the National Board of Medical Examiners.

TABLE 1.—*Licenses Issued, 1945*

	On the Basis of		
	Examination	Reciprocity and Endorsement	Total
Alabama	21	64	85
Arizona	11	21	32
Arkansas	123	11	134
California	500	708	1,208
Colorado	66	46	112
Connecticut	40	105	145
Delaware	5	11	16
District of Columbia	18	177	195
Florida	132	..	132
Georgia	124	17	141
Idaho	17	2	19
Illinois	417	64	481
Indiana	231	46	277
Iowa	98	19	117
Kansas	94	11	105
Kentucky	75	31	106
Louisiana	209	31	240
Maine	9	12	21
Maryland	155	101	256
Massachusetts	124	143	267
Michigan	189	160	349
Minnesota	217	58	275
Mississippi	51	19	70
Missouri	258	47	305
Montana	3	10	13
Nebraska	74	12	86
Nevada	1	19	20
New Hampshire	6	19	25
New Jersey	95	236	331
New Mexico	0	29	29
New York	287	512	799
North Carolina	132	64	196
North Dakota	4	4	8
Ohio	325	127	452
Oklahoma	70	41	111
Oregon	24	37	61
Pennsylvania	426	92	518
Rhode Island	12	18	30
South Carolina	58	29	87
South Dakota	6	6	12
Tennessee	246	45	291
Texas	296	145	441
Utah	28	33	61
Vermont	14	35	49
Virginia	39	44	83
Washington	34	53	87
West Virginia	20	17	37
Wisconsin	96	52	148
Wyoming	0	6	6
Alaska, Hawaii, Puerto Rico and Virgin Islands	41	23	64
Totals	5,541	3,612	9,153

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. of Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	ARKANSAS																																													
1	University of Arkansas School of Medicine					65	0															1	0			1	0													1	0					1
	CALIFORNIA																																													
2	College of Medical Evangelists							84	0	1	0							3	0					1	0	2	0													1	0	1	0	2
3	Stanford University School of Medicine							50	0	2	0	1	0									1	0															1	0			1	0	3
4	University of California Medical School							78	0																																					4
5	University of So. California School of Medicine	1	0					69	0	1	0													1	0																					5
	COLORADO																																												
6	University of Colorado School of Medicine							1	0	40	0											1	0			1	0											1	0					1	0	6
	CONNECTICUT																																													
7	Yale University School of Medicine											3	0			1	0	1	0															1	0									7
	DISTRICT OF COLUMBIA																																													
8	George Washington University School of Med							4	0	1	0					3	0	1	0					1	0					1	0							1	0					1	0	8
9	Georgetown University College of Medicine							2	1			1	0			2	0																	1	0			18	0	2	1					9
10	Howard University College of Medicine							1	0							10	1	1	0					2	0					2	0			2	1			15	0	1	0	1	0			10
	GEORGIA																																													
11	Emory University School of Medicine															22	0	56	0																											1	0	11
12	University of Georgia School of Medicine															9	0	64	0					0	1																							12
	ILLINOIS																																													
13	Loyola University School of Medicine							5	0									2	1			1	0	47	4	2	0									1	0	2	1	1	0			13
14	Northwestern University Medical School	1	0					16	0	2	0							5	1	1	0	1	0	82	0									2	0			1	0			6	0	11	0	14
15	University of Chicago, The School of Medicine							3	0	1	0			1	0									32	0	3	0	1	0									2	0	1	0	1	0	15
16	University of Illinois College of Medicine							13	0	1	0					1	0	0	3					80	2	1	0									1	0					1	0	5	0	16
	INDIANA																																													
17	Indiana University School of Medicine	1	0															2	1					3	0	213	0																	4	0	17
	IOWA																																												
18	State University of Iowa College of Medicine	1	0			3	0											5	1			1	0	2	0			45	1	1	0											2	0	4	0	18
	KANSAS																																												
19	University of Kansas School of Medicine					4	0	1	0															1	0					82	0													1	0	19
	KENTUCKY																																												
20	University of Louisville School of Medicine					1	0											3	0			1	0			1	0			72	0													20
	LOUISIANA																																												
21	Louisiana State University School of Medicine					1	0											6	1															78	0			1	0			2	0	21
22	Tulane Univ. of Louisiana School of Medicine	1	0			4	0											8	0															117	0							5	0	22
	MARYLAND																																												
23	Johns Hopkins University School of Medicine																	5	0					1	0											1	0	54	0	1	0			2	0	23
24	University of Maryland School of Medicine and College of Physicians and Surgeons					1	0			1	0							4	0	1	0																	72	0	0	1	1	0			24
	MASSACHUSETTS																																												
25	Boston University School of Medicine																	1	0																					1	0			1	0	25
26	Harvard Medical School					3	0	1	0	3	0			1	0	6	0					1	1	1	0											1	0	2	0	9	0	3	0	1	0	26
27	Tufts College Medical School							1	0									4	3															1	0	1	0			9	0					27
	MICHIGAN																																												
28	University of Michigan Medical School							6	0									2	0			1	0	3	0					1	0											2	0	107	0	28
29	Wayne University College of Medicine																	2	0																									61	0			29
	MINNESOTA																																												
30	University of Minnesota Medical School					1	0			3	0			1	0	2	1																					1	0			1	0	118	0	30
	MISSOURI																																												
31	St. Louis University School of Medicine					9	0											4	2					2	0															2	0			3	0	31
32	Washington University School of Medicine	1	0			6	0											1	0					2	0			1	0													1	0	32
	NEBRASKA																																												
33	Creighton University School of Medicine					22	0	6	0													1	0					18	0	12	0									0	1			3	0	33
34	University of Nebraska College of Medicine	1	0							1	0							1	0			1	0	1	0			1	0													2	0	34
	NEW YORK																																												
35	Albany Medical College																																												35
36	Columbia University Coll. of Phys. and Surgs.																	3	1			1	0															2	0	3	0	1	0	3	0	36
37	Cornell University Medical College											1	0					1	1																	2	0			2	0					37
38	Long Island College of Medicine	3	0					1	0									7	4																			1	0					1	0	38
39	New York Medical College, Flower and Fifth Avenue Hospitals			1	0			1	0									0	1																					1	0			1	0	39
40	New York University College of Medicine	1	0			3	0											6	3	1	0			3	0																	1	0	1	0	40
41	Syracuse University College of Medicine					1	0																																							41
42	University of Buffalo School of Medicine																	1	0																							1	0	1	0	42
43	University of Rochester School of Medicine and Dentistry							4	0			3	0					2	0															1	0					1	0	2	0			43
	NORTH CAROLINA																																												
44	Bowman Gray School of Medicine of Wake Forest College													1	1																													1	0	44
45	Duke University School of Medicine																	10	1																			1	0							45
	OHIO																																												
46	Ohio State University College of Medicine					2	0											8	3					1	0																			2	0	46
47	University of Cincinnati College of Medicine	1	0			1	1											4	0					2	0							1	0							2	1					47
48	Western Reserve University School of Medicine																							1	0	3	0															0	1					48
	OKLAHOMA																																												
49	University of Oklahoma School of Medicine					1	0											1	0					1	0																			2	0	49
	OREGON																																												
50	University of Oregon Medical School					7	0											1	0			5	0	1	0	2	0	1	0					1	0			1	0	1	0			7	0	50
	PENNSYLVANIA																																												
51	Hahnemann Med. Coll. and Hosp. of Phila					6	0					1	0					1	1					1	0									1	0			5	1	0	1					51
52	Jefferson Medical College of Philadelphia	5	0			1	0			2	0	1	0					5	0	1	0			1	0	1	0											9	0							52
53	Temple University School of Medicine					1	0			1	0	1	0					4	0					1	0	1	0	1	0									4	0	1	0	4	0	53
54	University of Pennsylvania School of Medicine	5	0			6	0			1	0	1	0					4	1															1	0	2	0	1	0	1	0	4	0	54
55	University of Pittsburgh School of Medicine					2	0											1	1							1	0															5	0	55
56	Woman's Medical College of Pennsylvania					1	0											1	0																					1	0					56
	SOUTH CAROLINA																																												
57	Medical College of the State of South Carolina																																											1	0	57
	TENNESSEE																																												
58	Meharry Medical College							1	0									5	0					3	0							1	0			1	0									58
59	University of Tennessee College of Medicine	3	0															9	0			1	0	5	0							1	0							0	1	1	0	3	0	59
60	Vanderbilt University School of Medicine																	1	0					1	0															1	0					60
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																							

P—Passed; F—Failed.

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| Marginal Number | 23 Mississippi | | 24 Missouri | | 25 Montana | | 26 Nebraska | | 27 Nevada | | 28 New Hampshire | | 29 New Jersey | | 30 New Mexico | | 31 New York | | 32 North Carolina | | 33 North Dakota | | 34 Ohio | | 35 Oklahoma | | 36 Oregon | | 37 Pennsylvania | | 38 Rhode Island | | 39 South Carolina | | 40 South Dakota | | 41 Tennessee | | 42 Texas | | 43 Utah | | 44 Vermont | | 45 Virginia | | 46 Washington | | 47 West Virginia | | 48 Wisconsin | | 49 Wyoming | | 50 Hawaii and Puerto Rico | | Totals | Examined—Passed | Examined—Failed | Percentage—Failed | No. Boards Examined by Marginal Number |
|---|---|---

Marginal Number	SCHOOL	1 Alabama		2 Arizona		3 Arkansas		4 California		5 Colorado		6 Connecticut		7 Delaware		8 Dist. of Columbia		9 Florida		10 Georgia		11 Idaho		12 Illinois		13 Indiana		14 Iowa		15 Kansas		16 Kentucky		17 Louisiana		18 Maine		19 Maryland		20 Massachusetts		21 Michigan		22 Minnesota		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	TEXAS																																										
61	Baylor University College of Medicine																	1	0					1	0																	1	0	61
62	Southwestern Medical College of the Southwestern Medical Foundation																																									62
63	University of Texas School of Medicine																	1	0					1	0																	1	0	63
	UTAH																																									
64	University of Utah School of Medicine							1	0																																	64
	VERMONT																																									
65	University of Vermont College of Medicine																	1	1																			2	0	1	0			65
	VIRGINIA																																									
66	Medical College of Virginia																	3	0																	1	0					1	0	66
67	University of Virginia Department of Medicine	5	0	1	0			1	0									4	0																			1	0			1	0	67
	WISCONSIN																																									
68	Marquette University School of Medicine							5	0	1	0							2	1					1	0									1	0							4	0	68
69	University of Wisconsin Medical School							5	0									1	0					1	0													1	0			2	0	69
	CANADA																																									
70	Dalhousie University Faculty of Medicine									1	0							1	1																									70
71	Laval University Faculty of Medicine																							0	1																			71
72	McGill University Faculty of Medicine	1	0					5	0																											1	0			3	0			1	0	72
73	Queen's University Faculty of Medicine																	1	0																									73
74	University of Alberta Faculty of Medicine							2	0																																			74
75	University of Manitoba Faculty of Medicine							1	0																																			75
76	University of Montreal Faculty of Medicine							1	0																															1	0					76
77	University of Toronto Faculty of Medicine																	3	0											1	0													77
78	University of Western Ontario Medical School																	1	0																									78
	OTHERS																																										
79	Foreign Medical Faculties	1	0					17	8	1	0	6	5			1	0	1	0					10	19	1	0									1	3	8	7	12	15	1	0			79
80	Extinct Medical Schools							0	1									3	3					3	0											1	0					4	0	80
81	Unapproved Schools and an Undergraduate									7	0	2	6											115	3													43	152					81
82	Totals	23		11		65		478		66		43		5		21		235		124		18		446		231		69		101		75		209		12		201		299		194		217		82
83	Totals—Examined—Passed	23		11		65		467		66		31		5		20		198		124		18		415		231		68		101		75		208		9		193		124		194		217		83
84	Totals—Examined—Failed	0		0		0		11		0		12		0		1		37		0		0		31		0		1		0		0		1		3		8		175		0		0		84
85	Percentage Failed	0.0		0.0		0.0		2.3		0.0		28.0		0.0		4.8		15.7		0.0		0.0		7.0		0.0		1.4		0.0		0.0		0.5		25.0		4.0		58.5		0.0		0.0		85
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

P—Passed; F—Failed.

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It does not follow that all physicians certified in a given year after examination were tested in that year. In twenty-three states, the District of Columbia, Alaska, the Canal Zone, Hawaii and Puerto Rico the internship is a requisite for practice, but in some of them a physician is permitted to take an examination before completion of the internship; if the examination is successful, the license is withheld until completion of the internship. Licenses are also withheld in some states for proof of citizenship and other technicalities. In other instances the licenses of those examined in December are dated and issued in the following year. The statistics in table 1, therefore, include many who were examined in 1944 and even a few in previous years. Consequently, figures in this table will not entirely correspond with those of later tables which deal with physicians examined for medical licensure.

The greatest number of licenses during the calendar year 1945 were issued in California, 1,208. Two other states licensed more than 500: New York 799 and Pennsylvania 518. Twenty states, the District of Columbia and the territories and possessions licensed fewer than 100. The smallest number (6) was granted in Wyoming. None were licensed by examination in New Mexico and Wyoming, and only 1 physician was registered by this method in Nevada. Twenty-one boards (notably California, Connecticut, the District of Columbia, New Jersey and New York) licensed more physicians by reciprocity or endorsement than by examination. Florida, Idaho, Massachusetts, Rhode Island and Hawaii have no reciprocal agreements, but with the exception of Florida these states endorse diplomates of the National Board of Medical Examiners.

Increases in the number of physicians registered last year as compared with data reported for the year 1944 [1] were noticeable in a number of states and particularly in Arkansas, California, the District of Columbia, Florida, Illinois, Indiana, Iowa, New Jersey and the possessions, while more pronounced decreases in registration occurred in Georgia, Kansas, Kentucky, Maryland, Michigan, Mississippi, Missouri, Nebraska, Ohio,

TABLE 3.—*Licenses Issued, 1935-1945*

	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,275	2,772	9,047
1937	6,629	3,204	9,833
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,866	9,155
1941	6,054	2,759	8,813
1942	6,141	2,469	8,610
1943	6,057	2,336	8,393
1944	7,058	2,589	9,647
1945	5,541	3,612	9,153
Totals	68,726	30,629	99,355

Pennsylvania and Virginia. The decreases in these states were most noticeable in the examination column.

Totals for ten previous years by all methods of licensure are shown for comparison in table 3. The high figures for the years from 1936 to 1941 in the annual number of licenses issued were due to the licensure of foreign graduates. In 1944 there was an increase of 1,254 over the number registered in the previous year, while in 1945 there were 494 fewer

1. J. A. M. A. **128**: 101-129 (May 12) 1945.

| Marginal Number | 23 Mississippi | | 24 Missouri | | 25 Montana | | 26 Nebraska | | 27 Nevada | | 28 New Hampshire | | 29 New Jersey | | 30 New Mexico | | 31 New York | | 32 North Carolina | | 33 North Dakota | | 34 Ohio | | 35 Oklahoma | | 36 Oregon | | 37 Pennsylvania | | 38 Rhode Island | | 39 South Carolina | | 40 South Dakota | | 41 Tennessee | | 42 Texas | | 43 Utah | | 44 Vermont | | 45 Virginia | | 46 Washington | | 47 West Virginia | | 48 Wisconsin | | 49 Wyoming | | 50 Hawaii and Puerto Rico | | Totals | Examined—Passed | Examined—Failed | Percentage—Failed | No. Boards Examined by | Marginal Number |
|---|---|---

Executive officers and members of examining boards are to be commended for adding this work to their already overtaxed responsibilities.

The 5,929 examinees represented 4,928 graduates of approved medical schools in the United States, of whom 2.5 per cent failed; 53 graduates of approved Canadian schools, 15.1 per cent of whom failed; 25 who graduated from approved medical schools no longer operating, with 24.0 per cent failures; 475 graduates of faculties of medicine located in countries other than the United States and Canada, 56.0 per cent of whom failed, and 448 graduates of unapproved schools with 40.8 per cent failures. The numbers examined in these categories depart significantly from the figures for the year 1944. The number from approved schools in 1945, while considerably lower than in 1944, is in excess of the normal number of annual examinees but cannot be compared with 1944, owing primarily to the accelerated program. Figures for the latter year represent two graduating classes in many instances, namely December 1943 and September 1944. There were considerable reductions among foreign graduates and graduates of unapproved schools. New York, where the greatest number of foreign graduates are tested, examined 190 fewer than in 1944. The majority of physicians recorded in the classification of extinct medical schools were graduates of Rush Medical College. In 1945 there were fewer graduates of this school examined than in 1944. There were also 134 fewer graduates of unapproved institutions examined. Massachusetts, where the examining board was compelled by law to examine such graduates, last year examined 122 fewer than the previous year. The state approving authority in Massachusetts, created some years ago, has ruled that only those graduates who matriculated in medical schools not acceptable to that body prior to Jan. 1, 1941 will be eligible for licensure examinations in the future.

TABLE 4.—*Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1945*

	Examined	Passed	Failed
Arizona	1	1	0
California	10	10	0
Florida	7	6	1
Illinois	1	0	1
Kansas	1	1	0
Maine	1	1	0
Massachusetts	4	4	0
Minnesota	1	1	0
Nevada	1	1	0
New Hampshire	2	2	0
New Jersey	1	1	0
New York	15	9	6
North Carolina	1	1	0
North Dakota	1	1	0
Ohio	1	1	0
Pennsylvania	3	3	0
Rhode Island	1	1	0
Washington	1	1	0
Totals	53	45	8

TABLE 5.—*Source of Candidates Examined for Licensure in the United States, 1945*

Medical Schools	Number of Schools	Number Examined	Number Passed	Number Failed	Percentage Failed
Approved in United States	69	4,928	4,803	125	2.5
Approved in Canada	9	53	45	8	15.1
Extinct	6	25	19	6	24.0
Foreign	78	475	209	266	56.0
Unapproved schools	14	448	265	183	40.8
Totals	176	5,929	5,341	588	9.9

As in table 1, the 5,929 physicians and others examined for medical licensure do not represent an equal number of individuals, since a candidate might take an examination in more than one state and is counted in each state. However, if a candidate fails more than once in a given state within the year he is counted in that state as only one failure.

The greatest number of graduates of any one school examined was 228, representing Indiana University School of Medicine, 213 of whom were examined in Indiana and 15 in seven other states. This figure includes two graduating classes (December 1944 and August 1945). Only 1 of these 228 examinees failed. More than 150 graduates of four other schools applied for licenses by examination last year, namely Northwestern University 158, St. Louis University 158, Jefferson Medical College 160 and the University of Tennessee 158.

Twenty-seven approved schools in the United States had no failures before medical licensing boards, 28 less than 5 per cent and 5 between 5 and 10 per cent. There were nine schools with 10 per cent or more failures in state examinations. Failures from all schools in this country amounted to 2.5 per cent. The percentages for failures are modified by data on those who were examined by the National Board of Medical Examiners in its final examination as well as those passing state tests (see table 6).

Graduates of the University of Pennsylvania were examined in the greatest number of states—twenty-two. Northwestern alumni were tested in twenty-one states, Harvard Medical School and Temple University in twenty states. All other schools had their graduates examined in fewer than twenty states. Fourteen schools had graduates examined in fewer than five states. Only 1 graduate of Albany took a state written examination; this occurred in Pennsylvania.

Two of the five homeopathic boards in existence examined 3 candidates: Delaware 1 and Maryland 2. The homeopathic boards in Arkansas, Connecticut and Louisiana did not examine any one in 1945. The one eclectic board in Arkansas likewise did not examine a candidate.

Fifty-three graduates of the nine approved medical schools in Canada were tested for medical licensure in the United States in 1945 in eighteen states (table 4), of whom 45 passed and 8 failed. Nearly half of these were examined in New York, with 15, and California, with 10. Normally, large numbers of the graduates of McGill University and the University of Toronto seek licensure in the United States. However, during the war years the migration of these graduates decreased. In 1945 there were 23 graduates of McGill examined in thirteen states and 7 from Toronto who appeared for licensure in four states. The highest percentage of failures was 66.7; however, this was from only 6 graduates of Laval University examined in three states. Four Canadian schools had no failures before United States licensing boards, while four other schools had percentages higher than 14. The one remaining school had 4.4 failures.

Graduates of osteopathic schools were examined by the medical boards of eight states, namely Colorado, Connecticut, Massachusetts, Nebraska, New Jersey, Ohio, Texas and Wisconsin, while graduates of unapproved schools were examined in Illinois, Massachusetts and Virginia. Included among unapproved graduates is 1 candidate who had not completed his

medical course. He failed in New Jersey. There were 448 graduates of unapproved and osteopathic schools, of whom 265 passed and 183, or 40.8 per cent, failed. The numbers of successful candidates in these two categories can be ascertained by reference to tables 23 and 24, page 126.

Graduates of medical schools of other countries were examined in twenty-five states, the District of Columbia and Puerto Rico. There were 475 such graduates, with 266 (56 per cent) failures.

Twenty-five graduates of medical schools no longer in operation were tested in eleven states, of whom 19 passed and 6 (24 per cent) failed.

Altogether there were 5,929 candidates who appeared before medical examining boards in 1945, of whom 5,341 passed and 588, or 9.9 per cent, failed.

The source of candidates for licensure last year on the basis of examination is further tabulated in table 5, giving totals for five groups, namely approved medical schools in the United States and those in Canada, schools no longer in existence, foreign faculties of medicine and unapproved institutions. As previously mentioned, 2.5 per cent from the United States schools failed, as did 15.1 per cent of the graduates of Canadian schools. The greatest percentage of failures represented two groups, foreign and unapproved schools. In these two categories 56 and 40.8 per cent respectively failed. Of extinct schools 15.1 per cent failed.

Figures which indicate actual licentiates and represent additions to the medical profession in 1945 are given later in tables 11, 12 and 13.

CONSOLIDATED EXAMINATIONS

A more accurate picture of the performance of graduates in licensure examinations than the foregoing is given by the figures which combine the results of state medical board examinations with those of part III of the National Board examinations (table 6). In 1945 there were 4,928 graduates of approved medical schools in the United States examined by medical licensing boards, of whom 2.5 per cent failed. In the same period 1,219 graduates of these institutions appeared for part III of the examination of the National Board of Medical Examiners, of whom 2.4 per cent failed. In some instances schools having a high percentage of failures before licensing boards had few, if any, failures before the National Board of Medical Examiners. In these consolidated figures for 6,147 graduates the percentage of failures of approved medical schools in the United States was reduced to 2.2.

Of the Canadian graduates 15.1 per cent failed state board tests and 13.1 the combined tests. Little comparison is possible in this group, since only 8 graduates of three Canadian schools were examined by the National Board.

Only 3 graduates of foreign medical faculties were admitted to the National Board's final examination, while 475 were examined by state licensing boards. The National Board does not admit to its examinations the graduates of unapproved medical schools in the United States, and from foreign schools it admits only the graduates of the university medical schools of Great Britain and Ireland provided these graduates have been licensed to practice in the country in which the school attended is located.

The total of all examined before medical licensing boards was 5,929, of whom 5,341 passed and 588, 9.9 per cent, failed. For both groups—state boards and the National Board—7,160 were examined; 6,559 passed

TABLE 6.—*Consolidated Examinations, State Medical Examining Boards and the National Board of Medical Examiners, 1945*

School	Results by Medical Examining Board Tests		Part III Examination of National Board of Medical Examiners		Total Examined	Totals		
	P	F	P	F		P	F	%F
University of **Arkansas**	73	0	2	0	75	75	0	0.0
Coll. of Med. Evan. **(Calif.)**	100	0	30	0	130	130	0	0.0
Stanford University	56	1	2	0	59	58	1	1.7
Univ. of California	79	0	0	0	79	79	0	0.0
Univ. of Southern California	73	0	2	0	75	75	0	0.0
Univ. of **Colorado**	46	0	1	0	47	47	0	0.0
Yale Univ. **(Connecticut)**	10	0	49	1	60	59	1	1.7
Geo. Washington Univ. **(D.C.)**	17	0	52	0	69	69	0	0.0
Georgetown University	46	7	28	1	82	74	8	9.8
Howard University	75	5	3	0	83	78	5	6.0
Emory Univ. **(Georgia)**	80	0	0	0	80	80	0	0.0
University of Georgia	73	1	0	0	74	73	1	1.4
Loyola Univ. **(Illinois)**	69	9	3	0	81	72	9	11.1
Northwestern University	157	1	9	0	167	166	1	0.6
University of Chicago	53	2	3	0	58	56	2	3.4
University of Illinois	110	5	4	0	119	114	5	4.2
Indiana University	227	1	3	0	231	230	1	0.5
State University of **Iowa**	68	2	11	0	81	79	2	2.5
University of **Kansas**	90	0	0	0	90	90	0	0.0
Univ. of Louisville **(Ky.)**	82	0	10	0	92	92	0	0.0
Louisiana State University	91	1	0	0	92	91	1	1.1
Tulane University	148	1	0	0	149	148	1	0.7
Johns Hopkins Univ. **(Md.)**	72	0	6	0	78	78	0	0.0
University of Maryland	103	1	2	0	106	105	1	0.9
Boston Univ. **(Mass.)**	3	0	48	2	53	51	2	3.8
Harvard Medical School	45	2	109	0	156	154	2	1.3
Tufts College Med. School	19	3	99	0	121	118	3	2.5
University of **Michigan**	127	0	8	0	135	135	0	0.0
Wayne University	63	0	1	0	64	64	0	0.0
University of **Minnesota**	133	2	7	0	142	140	2	1.4
St. Louis Univ. **(Missouri)**	154	4	9	0	167	163	4	2.4
Washington University	110	1	2	0	113	112	1	0.9
Creighton Univ. **(Nebraska)**	70	2	1	0	73	71	2	2.7
University of Nebraska	80	4	2	0	86	82	4	4.7
Albany Med. Coll. **(N. Y.)**	1	0	42	0	43	43	0	0.0
Columbia University	19	1	87	0	107	106	1	0.9
Cornell University	18	1	48	0	67	66	1	1.5
Long Island Coll. of Med.	40	9	62	1	112	102	10	8.9
New York Medical College	6	4	85	5	100	91	9	9.0
New York University	45	6	83	0	134	128	6	4.5
Syracuse University	20	2	17	0	39	37	2	5.1
University of Buffalo	10	0	69	0	79	79	0	0.0
University of Rochester	35	0	39	0	74	74	0	0.0
Bowman Gray School of Med. **(North Carolina)**	41	1	0	0	42	41	1	2.4
Duke University	46	1	71	1	119	117	2	1.7
Ohio State University	89	3	1	0	93	90	3	3.2
University of Cincinnati	92	2	4	0	98	96	2	2.0
Western Reserve University	93	3	1	0	97	94	3	3.1
University of **Oklahoma**	73	0	1	0	74	74	0	0.0
University of **Oregon**	51	0	3	0	54	54	0	0.0
Hahnemann, Phila. **(Pa.)**	108	13	6	0	127	114	13	10.2
Jefferson Medical College	159	1	10	0	170	169	1	0.6
Temple University	109	4	3	0	116	112	4	3.4
University of Pennsylvania	124	1	27	0	152	151	1	0.7
University of Pittsburgh	84	4	0	0	88	84	4	4.6
Woman's Med. College	17	3	10	0	30	27	3	10.0
Med. Coll. of **South Carolina**	53	0	0	0	53	53	0	0.0
Meharry Med. Coll. **(Tenn.)**	64	4	7	2	77	71	6	7.8
University of Tennessee	156	2	3	0	161	159	2	0.6
Vanderbilt University	54	2	3	0	59	57	2	3.4
Baylor University **(Texas)**	39	0	0	0	39	39	0	0.0
Southwestern Medical Coll.	47	0	0	0	47	47	0	0.0
University of Texas	110	0	0	0	110	110	0	0.0
University of **Utah**	6	0	0	0	6	6	0	0.0
University of **Vermont**	6	1	8	0	15	14	1	6.7
Med. Coll. of **Virginia**	25	0	2	0	27	27	0	0.0
University of Virginia	50	0	1	0	51	51	0	0.0
Marquette Univ. **(Wisconsin)**	64	2	6	0	72	70	2	1.4
University of Wisconsin	47	0	1	0	48	48	0	0.0
Subtotals: U. S. Schools	4,803	125	1,206	13	6,147	6,009	138	2.2
Dalhousie Univ. **(N. S.)**	3	1	0	0	4	3	1	25.0
Laval Univ. **(Quebec)**	2	4	0	0	6	2	4	66.7
McGill University	22	1	6	0	29	28	1	3.4
Univ. of Montreal	4	0	0	0	4	4	0	0.0
Queen's Univ. **(Ontario)**	1	0	1	0	2	2	0	0.0
University of **Alberta**	2	0	0	0	2	2	0	0.0
University of **Manitoba**	2	0	0	0	2	2	0	0.0
Univ. of Toronto **(Ontario)**	6	1	1	0	8	7	1	12.5
Univ. of Western Ontario	3	1	0	0	4	3	1	25.0
Subtotals: Canadian Schools	45	8	8	0	61	53	8	13.1
Extinct Medical Schools	19	6	1	0	26	20	6	23.1
Unapproved Schools	265	183	0	0	448	265	183	40.9
Foreign Medical Faculties	209	266	3	0	478	212	266	55.6
Totals	5,341	588	1,218	13	7,160	6,559	601	8.4

and 601, or 8.4 per cent, failed. Fifty-nine existing schools and one extinct approved medical school were represented in the National Board's examinations. Seventeen of these schools had graduates examined in each group, with no failures in either. Three schools had failures of 10 per cent or more in the combined statistics: Loyola 11.1, Hahnemann 10.2 and Woman's Medical College 10.0.

FAILURES

Failure before medical licensing boards by licentiates of 1945 are recorded in table 7. In presenting these statistics the United States is divided into two groups—the thirty states and the District of Columbia in which approved four year medical schools are located and those states and territories and possessions which have no medical school within their boundaries. Included is the number who failed state board examinations and were graduates of a medical school located in the state in which they were examined and, for comparison, the number of graduates licensed in a given state who obtained their professional training in schools in other states.

Practically all states require the applicant to receive a general average of 75 per cent and 50 per cent in any one subject. In case of failure in not more than two subjects the applicant is entitled to another examination in those subjects within twelve months. A few states consider such individuals as conditioned in the subjects in which they fail and do not report them to the office of the Council on Medical Education and Hospitals as failures. In these instances they are not considered in the calculations in this study. When their grades are raised after a successful test in the subjects in which they failed they are recorded among those who passed.

Thirty-seven physicians failed examinations in the state in which they obtained their professional training. This occurred in seven states. Twenty-four states had no failures from approved schools within their boundaries. On the other hand, ten states reported 53 failures who graduated from approved medical schools located in states other than the one in which they were examined. Of particular interest in analyzing this table was the fact that the three approved medical schools in Massachusetts had no failures before the licensing board of that state while 11 per cent of the graduates of thirty approved schools in other states failed. In New York 6.6 per cent of those who studied medicine in eight of the nine medical schools located in that state who appeared for licensure in 1945 failed and 17.8 per cent who obtained their training in thirty-four schools located in other states failed.

In eighteen states having no medical schools only two reported failures, Florida and Nevada, 33 and 1 respectively. Fifty-three schools were represented at Florida examinations, with 14.9 per cent failures.

The total examined in the first group—states in which approved four year medical schools are located—was 4,426, while in the second group—states which have no approved medical school within their boundaries—502 were examined.

In another table presented in this group (table 8) the data are further subdivided by the number of candidates who were licensed after previous failure. The figures are presented for three categories—approved medical schools in the United States and Canada, foreign faculties of medicine and unapproved institutions. These groups are classified according to the number licensed after failing a state board examination once and after two or more failures and indicates whether the single and multiple failures have been in the state where licensed or elsewhere. The total number of candidates in 1945 examined and licensed or granted licenses by reciprocity or endorsement of credentials is shown as well as the total number of failures in all groups.

In 1945 there were 9,153 individuals licensed to practice medicine. Of these 381 had previously been unsuccessful before a licensing board. From the approved schools 170 of those licensed had previously failed a state board examination. Sixty-nine had one failure before being licensed in a given state, and sixty-two were licensed after one failure in another state. Thirty-nine received licenses after more than one failure, 16 of whom were registered in the original state, 19 elsewhere and 4 failed in the state where licensed and elsewhere.

One hundred and sixty-seven graduates of foreign faculties of medicine and 44 graduates of unapproved institutions were licensed after previous failure. The multiple failures shown for these two groups reveals the difficulty these individuals experience in passing licensure tests. In the computation of these statistics the

TABLE 7.—*Licensure Failures by Graduates of Approved Schools Located in the State Where Examined and Elsewhere, 1945*

	Total No. Examined	No. Failures of Schools in State	No. Schools in State Represented at Examinations	Per Cent Failed	No. Failures Schools Out of State	No. Schools Out of State Represented at Examinations	Per Cent Failed	Per Cent Failed in All U. S. Schools
Arkansas	65	0	1	0.0	0	0	0.0	0.0
California	442	0	4	0.0	2	40	0.5	0.5
Colorado	58	0	1	0.0	0	11	0.0	0.0
Connecticut	24	0	1	0.0	1	13	4.2	4.2
Dist. of Columbia	20	1	3	5.0	0	4	0.0	5.0
Georgia	124	0	2	0.0	0	4	0.0	0.0
Illinois	295	6	4	2.0	2	30	0.7	2.7
Indiana	230	0	1	0.0	0	12	0.0	0.0
Iowa	69	1	1	1.4	0	6	0.0	1.4
Kansas	100	0	1	0.0	0	6	0.0	0.0
Kentucky	73	0	1	0.0	0	3	0.0	0.0
Louisiana	209	0	2	0.0	1	11	0.5	0.5
Maryland	185	0	2	0.0	1	20	0.5	0.5
Massachusetts	73	0	3	0.0	8	30	11.0	11.0
Michigan	195	0	2	0.0	0	17	0.0	0.0
Minnesota	232	0	1	0.0	0	39	0.0	0.0
Missouri	257	0	2	0.0	0	11	0.0	0.0
Nebraska	76	4	2	5.3	0	0	0.0	5.3
New York	197	13	8	6.6	35	34	17.8	24.4
North Carolina	131	0	2	0.0	1	13	0.8	0.8
Ohio	276	0	3	0.0	1	15	0.4	0.4
Oklahoma	69	0	1	0.0	0	1	0.0	0.0
Oregon	19	0	1	0.0	0	3	0.0	0.0
Pennsylvania	431	10	6	2.3	0	24	0.0	2.3
South Carolina	58	0	1	0.0	0	6	0.0	0.0
Tennessee	194	2	3	1.0	0	2	0.0	1.0
Texas	199	0	3	0.0	1	8	0.5	0.5
Utah	13	0	1	0.0	0	6	0.0	0.0
Vermont	2	0	1	0.0	0	0	0.0	0.0
Virginia	35	0	2	0.0	0	0	0.0	0.0
Wisconsin	96	0	2	0.0	0	10	0.0	0.0
Subtota s	4,426	37	08	0.8	53	379	1.2	2.0
	States Without Medical Schools							
Alabama	22				0	6	0.0	0.0
Arizona	16				0	10	0.0	0.0
Delaware	5				0	5	0.0	0.0
Florida	221				33	53	14.9	14.9
Idaho	18				0	14	0.0	0.0
Maine	7				0	5	0.0	0.0
Mississippi	49				0	11	0.0	0.0
Montana	2				0	2	0.0	0.0
Nevada	1				1	1	100.0	100.0
New Hampshire	2				0	2	0.0	0.0
New Jersey	73				0	17	0.0	0.0
New Mexico	0				0	0	0.0	0.0
North Dakota	2				0	1	0.0	0.0
Rhode Island	4				0	3	0.0	0.0
South Dakota	4				0	3	0.0	0.0
Washington	30				0	17	0.0	0.0
West Virginia	20				0	13	0.0	0.0
Wyoming	0				0	0	0.0	0.0
Territories & Poss.	32				1	19	3.1	3.1
Subtotals	502				35	182	7.0	7.0

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records indicated that 39 graduates of foreign faculties of medicine, 8 graduates of unapproved institutions and 6 from approved schools failed five or more times before licensure. Of the foreign graduates 14 had five failures before obtaining a license, 7 failed six examinations, 5 failed seven, 4 eight, 3 nine, 1 each ten, eleven and twelve, 2 thirteen and 1 failed fifteen tests.

The 8 graduates of unapproved institutions failed as follows: five tests, 2; six tests, 3; seven tests, 1, and

REGISTRATION BY RECIPROCITY AND ENDORSEMENT

The reciprocity and endorsement policies in effect in the United States, Alaska, Hawaii and Puerto Rico are summarized in table 9. Four states, Florida, Idaho, Massachusetts and Rhode Island, as well as Hawaii, have not established reciprocal agreements with regard to medical licensure. With the exception of Florida, these states and Hawaii will register diplomates of the National Board of Medical Examiners. Those desiring

TABLE 8.—*Failures Before Medical Licensing Boards by Licentiates, 1945*

	Licenses Issued by Examination, Reciprocity or Endorsement	Approved Schools					Foreign Schools					Unapproved Schools					Total Failures by Licentiates, 1945
		Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			
		Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	
Alabama	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Arizona	32	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	3
Arkansas	134	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
California	1,208	19	9	4	2	2	2	1	1	4	4	..	..	..	..	..	48
Colorado	112	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Connecticut	145	3	1	..	2	..	1	..	1	..	1	..	..	2	..	..	11
Delaware	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
District of Columbia	195	1	4	..	..	..	..	3	..	4	..	..	..	..	..	..	12
Florida	152	1	2	..	..	1	..	..	..	..	..	..	..	..	..	..	4
Georgia	141	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Idaho	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Illinois	481	4	4	2	1	..	4	..	..	1	1	..	..	..	..	..	16
Indiana	277	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Iowa	117	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Kansas	105	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Kentucky	106	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Louisiana	240	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2
Maine	21	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Maryland	256	..	2	..	1	..	..	1	1	..	..	..	..	..	..	..	5
Massachusetts	267	3	3	2	..	1	1	1	1	1	1	5	..	23	..	..	42
Michigan	249	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Minnesota	275	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Mississippi	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Missouri	305	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Montana	13	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Nebraska	86	2	..	..	..	..	..	..	..	..	..	2	..	..	..	..	4
Nevada	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
New Hampshire	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
New Jersey	331	..	5	..	1	..	1	9	..	25	2	..	..	..	..	..	43
New Mexico	29	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2
New York	796	25	1	8	..	..	31	2	48	1	7	..	..	..	..	..	123
North Carolina	196	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
North Dakota	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Ohio	452	..	2	..	2	..	..	..	..	2	..	7	1	2	..	..	16
Oklahoma	111	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Oregon	61	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Pennsylvania	518	8	3	..	..	..	..	..	..	..	..	..	..	..	..	..	11
Rhode Island	30	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
South Carolina	87	1	2	..	2	..	..	..	..	..	..	..	..	..	..	..	5
South Dakota	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Tennessee	291	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2
Texas	449	..	1	..	1	..	..	1	..	..	..	..	..	1	..	..	4
Utah	61	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Vermont	49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Virginia	83	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	2
Washington	87	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	2
West Virginia	37	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Wisconsin	148	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	4
Wyoming	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Alaska, Hawaii, Puerto and Virgin Islands	64	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Totals	9,153	69	62	16	19	4	40	19	52	41	15	14	1	28	1	0	381

1 graduate failed twenty-one tests and another thirty tests, all in Massachusetts, before securing licensure in that state. The majority of these physicians with multiple failures were Massachusetts and New York examinees.

In sixteen states all physicians licensed last year had no failure in a state medical examination before being registered. With the exception of California, Connecticut, the District of Columbia, Illinois, Massachusetts, New Jersey, New York, Ohio and Pennsylvania, the number of physicians licensed throughout the country in each state after previously having failed was less than 10.

licenses by reciprocity or endorsement in sixteen states and the District of Columbia are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for medical licensure in the given state.

Some kind of reciprocal relationship in medical licensure has been established in forty-four states, the District of Columbia, Alaska and Puerto Rico. Twenty-six of these states, Alaska and Puerto Rico have definite reciprocal agreements with specific states. Twenty-six states, including seven which have specific reciprocity agreements, are given discretionary powers under the medical practice act. These twenty-six states will regis-

ter physicians who present credentials which correspond with those required by their respective states at the time such licenses are issued. The states in which diplomates of the National Board of Medical Examiners are accepted for licensure on the basis of these credentials are also indicated.

of medicine on a reciprocal basis. Additional requisites or exemptions are included in footnotes.

This chart will be available in reprint form. It has proved to be of material assistance to physicians who are contemplating locating in another state. The facts recorded in this table are intended to be

TABLE 9.—*Reciprocity and Endorsement*

Marginal Number	The Examining Board of	Reciprocates with, or Endorses Certificates Granted by: Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	Marginal Number
1	Alabama	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	..	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	..	..	..	+	..	..	+	..	..	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	3
4	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (reg. & homeo. bds.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	10
11	Idaho	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	+	..	+	..	..	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	12
13	Indiana	+	..	+	+	+	..	..	+	..	+	..	[12]	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	13
14	Iowa	+	..	+	+	+	..	+	+	..	+	..	+	..	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	14
15	Kansas	+	+	[19]	+	..	..	+	+	..	+	..	+	+	..	..	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	15
16	Kentucky	+	..	+	+	+	..	+	+	..	+	..	+	+	+	..	..	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	16
17	Louisiana (reg. & homeo. bds.)	+	+	+	+	+	..	+	+	..	+	..	+	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	+	+	17
18	Maine	+	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	18
19	Maryland (reg. & homeo. bds.)	+	..	+	+	..	..	..	+	..	+	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	19
20	Massachusetts	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
21	Michigan	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	21
22	Minnesota	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	22
23	Mississippi	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	23
24	Missouri	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24
25	Montana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
26	Nebraska	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	..	+	+	+	+	+	26
27	Nevada	..	..	[21]	+	..	..	..	..	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	..	+	..	+	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	New Jersey	+	..	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	..	..	..	+	..	+	..	..	..	29
30	New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
31	New York	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
32	North Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	North Dakota	+	..	+	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38
39	South Carolina	+	..	..	..	..	..	..	+	..	+	..	..	..	..	+	+	+	+	..	..	+	..	..	..	..	+	..	+	+	..	..	39
40	South Dakota	+	+	+	+	+	..	..	+	..	+	..	+	+	+	+	+	..	..	+	..	+	+	..	..	+	..	+	..	..	+	..	40
41	Tennessee	+	+	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	41
42	Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
43	Utah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43
44	Vermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	Virginia	+	..	+	+	..	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	..	+	..	+	..	+	+	..	45
46	Washington	+	..	+	+	+	..	+	..	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	..	..	..	46
47	West Virginia	+	..	+	..	..	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	..	..	47
48	Wisconsin	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	+	..	+	+	+	+	+	..	+	..	..	+	..	+	+	..	+	..	..	+	..	+	..	+	..	..	+	+	+	..	..	50
51	Hawaii	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52

This summary should be supplemented by direct communication with the

Some states have additional requirements for graduates of schools outside the United States and Canada.

+, indicates reciprocal or endorsement relationships have been established; .. indicates no reciprocal or endorsement relationships have been established. (See column—"At the discretion of the board.")

1. 1st P, first papers required; ⊕, in citizenship column indicates full citizenship required.
2. In most cases there is a small additional recording or registration fee.
3. If state of original license grants similar privileges.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. All applicants must be graduates of a medical school approved by the American Medical Association.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Canadian citizens are required to file first papers.
11. Leading medical schools of Great Britain recognized.
12. Oral examination required when original license is ten or more years old.
13. Applicant must have resided in the state used as basis of application for one year after date on said certificate.
14. Oral examination required.
15. Unless in practice in another state for five years.
16. Actual practice for a period of three years immediately preceding date of application.
17. Practical, clinical examination required.
18. Foreign graduates only.
19. Regular and Homeopathic boards.

Specific requirements, such as professional practice, oral examination and internship, are recorded, as is also the fee for a license without written examination. Citizenship prerequisites are mentioned. In some states physicians of Canadian birth are exempt from the citizenship requirement. This is indicated in footnotes. Few states will accept graduates of foreign faculties merely general statements of licensure policies. A physician using this chart for reciprocity purposes should supplement the information contained therein by direct communication with the secretary of the licensing board of the state in which he is interested.

The credentials presented by physicians granted licenses to practice medicine and surgery without writ-

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ten examination are given in table 10. There were 3,612 so registered on the basis of licenses previously issued by other states, the District of Columbia, the territories or possessions or foreign countries, the certificate of the National Board of Medical Examiners or one of the government services.

the same type of credentials were the 1,103 presenting certificates of the National Board of Medical Examiners. On the basis of the National Board's certificate 407 were certified by New York and 143 by Massachusetts.

More than 100 physicians presented licenses issued in Illinois, Maryland, Michigan, Missouri, New York,

Policies of State Medical Boards

Marginal Number	Reciprocates with, or Endorses Certificates Granted by: New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	Requirements: Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]	Miscellaneous	Marginal Number
1	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	..	+[3]	+	..	⊕	1[4]	⊕[44]	50	..	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕[8]	..	2[4,7]	100	42	2
3	+	+	+	+	..	+	..	+	+	+	+	..	+	..	+	..	+	+	+	+	..	..	+[9]	⊕	⊕	1[4]	⊕	50[22]	42	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[12]	+[12,43]	..	41	1[13]	..	100	43	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9]	⊕	..	1[4]	1st P	50	42	5
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14,39]	+[14,27]	⊕[15]	..	2[16]	1st P	50	..	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[5]	⊕	⊕	2	⊕	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[27]	⊕	⊕	1	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	0	⊕	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	⊕	..	⊕	50	..	11
12	..	+	+	+	+	+	+	..	..	..	+	+	+	+	+	..	+	+	+	..	..	+[17]	..	..	⊕	1	1st P	25	17.42	12
13	+	+	+	+	+	+	..	..	+	+	+	+	+	+	..	+	+	+	+	..	..	..	..	..	..	1[4]	..	50	..	13
14	..	+	+	+	+	..	+	..	+	+	..	+	+	+	+	+	+	+	..	..	..	+	⊕	⊕	..	1[4]	⊕[44]	50	..	14
15	..	+	+	+	+	..	+	..	+	+	..	+	+	+	+	+	+	+	+	..	..	+	..	..	..	1[4,7]	⊕	25	42	15
16	..	..	..	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	+	..	..	..	1[4]	⊕	50	42	16
17	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	33	1[4]	1st P[10,19]	50[22]	42	17
18	..	..	+	+	+	+	..	+	..	+	+	+	+	+	+	..	+	+	..	..	..	+[14]	..	..	⊕[18]	1[4]	⊕[44]	52	..	18
19	+	+	..	+	+	+	+	..	+	..	+	+	..	+	..	+	+	..	+	..	+	+	..	..	..	1[4]	1st P	50	42	19
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0	1st P	25	..	20
21	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+[38]	⊕[37]	⊕	1[4]	⊕	55	34	21
22	+	+	..	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	..	+	+	+	⊕	..	0	⊕[44]	75	17.42	22
23	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	..	+	..	..	..	..	⊕[44]	50	42.44	23
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[39]	..	⊕[33]	1[4]	⊕[44]	50	..	24
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	⊕	1[4]	⊕	75	44	25
26	+	+	+	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	+[39]	⊕	..	1[4]	⊕	50	..	26
27	+	..	..	+	+	+	+	..	..	+	+	..	+	..	+	..	+	..	+	..	+	..	..	..	⊕	1[4]	1st P	100	14.42	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	0	⊕[44]	20	..	28
29	+	..	+	+	+	..	+	..	..	..	+	+	+	+	..	+	+	..	..	..	..	+	+	..	⊕	0	⊕	100	..	29
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	⊕	..	1[4]	1st P	50	42	30
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	2	1st P	25	..	31
32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	0	..	50	42.6	32
33	..	+	..	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	..	..	..	+	..	⊕	1	⊕	50[22]	14.42	33
34	..	+	+	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	+	..	..	1[4]	⊕	50	22	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	1[4]	⊕	100	42.44.6	35
36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[29]	+[9,27]	⊕	⊕	1[4]	⊕	100	42.4	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	2[24]	1st P	100	42	37
38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	⊕	⊕	0	1st P	20	..	38
39	..	+	+	+	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	1[4]	⊕	50	42	39
40	..	+	+	+	+	+	..	..	+	..	+	..	+	+	+	+	+	+	..	..	..	..	+	⊕	..	⊕	1st P	50	42	40
41	+	+	..	+	+	..	+	..	+	+	..	+	+	..	+	+	+	+	..	..	..	..	+[39]	⊕	..	0	⊕	10	42	41
42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0	⊕	50	..	42
43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	0[34]	⊕	50	42	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[38]	..	..	0	⊕	50	..	44
45	+	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	+	+	+	..	..	+	+	..	⊕[18]	2[26]	⊕[44]	50	..	45
46	..	..	..	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	..	+	..	..	+[8]	⊕	⊕	0	1st P	25	42	46
47	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	..	..	..	[28]+	+	..	..	+	⊕	⊕	0	⊕	100	42	47
48	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	..	+	..	+	..	+[14]	..	⊕	⊕	0[30]	⊕	50[22]	42	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14]	..	⊕	0	⊕	50	..	49
50	..	+	+	+	+	+	..	..	..	..	+	+	+	+	+	+	+	+	..	..	..	..	+	..	⊕	0	⊕	100	6	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	⊕	..	⊕	25	11.42.6	51
52	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	1[25]	⊕	25	..	52

secretary of the licensing board of the state in which the physician is interested.

29. Licentriates of Florida, Idaho, Massachusetts, Rhode Island and Hawaii not eligible for license by reciprocity.
21. Regular board.
22. Fee same as applicant's state charges if more than $50.
23. Oral examination required if applicant's state requires it.
24. If the applicant passes the examination in the state from which he transfers after the completion of his internship, no practice is required.
25. Two year residency accepted in lieu of one year's practice.
26. Internship accepted—considered equivalent to two years' practice.
27. Fee $25.
28. Conditionally.
29. A two year internship is accepted.
30. Diplomates of National Board not required to have been in practice for three years.
31. Same as required of Utah candidates applying for licensure.
32. Clinical examination required.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee for license on basis of National Board certificate, $50.
37. For matriculants after Oct. 15, 1937.
38. Fee, $20.
39. Fee, $15.
40. Permanent license withheld until completion of citizenship.
41. Graduates of foreign medical schools effective Sept. 15, 1935. Canadian schools exempted effective Sept. 19, 1939.
42. Graduates of foreign medical school are not accepted.
43. Graduates of foreign medical schools must have fulfilled all requirements of California prior to admittance to examination for any certificate used as basis of application to California.
44. Not applicable to citizens of Canada.

California issued 708 licenses by this method, New York 512 and New Jersey 236. Seven other states endorsed 100 or more candidates, namely the District of Columbia 177, Michigan 160, Texas 145, Massachusetts 143, Ohio 127, Connecticut 105 and Maryland 101. The largest numbers of candidates presenting Ohio, Pennsylvania and Tennessee. The greatest number (298) were licensed on the basis of previous registration in New York. Other states registered 69 physicians holding California licenses, while that state licensed on credentials 708 physicians from other states. Similarly other states licensed 37 physicians from New

TABLE 10.—*Candidates Licensed by Reciprocity and Endorsement, 1945*

State Issuing License by Reciprocity or Endorsement	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Govt. Services	National Board of Medical Examiners	U. S. Terr. and Possessions	Canadian & Foreign	Miscellaneous
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
	Source of Former License or Credentials																																																						
Alabama	64	..	..	4	1	..	..	..	..	..	8	..	3	..	..	..	1	7	..	2	..	1	..	..	1	..	..	..	..	..	..	5	..	..	1	..	..	2	..	2	..	13	2	..	1	1	..	..	..	..	5	..	..	..
Arizona	21	..	..	1	2	..	..	..	..	..	..	..	1	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	3	..	..	..	..	..	1	..	..	1	..	..	..
Arkansas	11	..	..	..	1	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
California	708	2	3	4	..	12	3	..	4	3	5	2	108	16	6	15	8	10	1	21	3	38	37	4	25	4	16	1	..	10	..	68	2	1	45	7	12	34	2	1	1	9	12	5	..	5	16	3	14	..	11	98	1	..	..
Colorado	46	..	..	2	5	..	..	..	..	..	..	..	5	2	1	..	1	2	..	..	..	1	5	..	..	..	8	..	..	..	..	2	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Connecticut	105	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	1	..	..	5	5	1	2	..	..	..	..	..	..	2	..	22	..	..	..	..	..	3	..	..	..	1	..	..	..	..	1	2	..	1	2	..	..	52	..	1	..
Delaware	17	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Dist. Columbia	177	1	..	..	2	..	2	..	..	..	4	..	5	4	..	..	1	1	3	19	..	4	..	..	1	3	..	4	..	..	8	..	21	2	..	7	..	..	12	..	..	..	5	1	..	..	17	..	2	2	..	..	47	2	..	..
Florida	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	..	5	..	..	1	1	..	..	..	..	..	2	..	..	..
Georgia	17	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Idaho	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	..	..	..
Illinois	64	..	..	1	1	1	..	..	..	..	..	..	..	1	2	4	1	..	..	..	..	4	2	..	11	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	2	..	..	9	..	..	..
Indiana	46	..	..	..	1	..	..	..	..	..	..	..	10	..	1	..	2	..	1	..	..	5	..	..	1	..	1	..	..	..	..	5	..	1	4	..	..	1	..	2	..	..	..	..	..	..	1	..	..	..	..	5	..	..	..
Iowa	19	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	1	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	1	..	3	..	..	..
Kansas	11	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	3	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Kentucky	31	1	..	..	..	..	..	..	1	..	..	..	2	..	1	..	..	..	3	..	..	1	..	..	1	..	..	..	1	..	1	2	..	..	3	..	..	3	..	..	..	3	..	1	..	2	..	..	..	..	1	4	..	..	..
Louisiana	31	2	..	..	1	..	..	..	1	..	..	..	1	..	..	..	3	..	..	2	..	..	..	..	5	..	..	..	1	..	..	2	..	..	2	1	..	2	..	..	..	3	3	..	..	..	1	1	..	..	..	8	..	..	..
Maine	12	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maryland	101	..	..	1	1	..	1	1	37	..	1	..	..	..	..	..	..	1	..	..	..	2	1	..	..	..	..	..	2	9	3	3	1	..	9	..	..	3	..	..	..	5	..	1	1	..	..	17	..	..	1	..
Massachusetts	143	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	143	..	..	..
Michigan	169	..	..	2	4	2	..	..	..	..	..	17	14	6	5	1	1	2	3	..	7	1	10	..	2	..	..	..	1	9	3	..	16	4	..	7	..	1	..	18	5	..	..	2	2	4	..	..	11	..	..	..
Minnesota	58	1	..	3	3	..	..	..	..	2	..	1	..	..	2	..	..	..	1	..	7	..	..	2	1	3	..	..	..	..	2	..	..	1	1	2	..	..	..	..	..	1	..	..	5	..	20	..	..	..
Mississippi	19	1	..	1	..	..	1	..	..	..	..	2	1	..	..	..	1	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	4	..	..	1	..	..	..	..	2	..	..	..
Missouri	47	..	..	3	1	..	1	..	..	..	..	1	..	3	9	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3	1	..	3	2	..	2	..	..	..	6	2	..	..	..	..	7	..	..	..	..
Montana	10	..	..	..	1	1	..	..	..	..	..	1	..	2	..	..	..	1	..	..	2	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nebraska	12	..	..	..	1	..	..	..	..	..	..	..	..	3	1	..	1	..	..	..	..	1	1	1	..	..	..	..	..	..	..	1	1	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Nevada	19	..	..	..	9	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	8	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	6	..	..	..
New Hampshire	19	..	..	..	..	..	..	..	1	..	..	..	..	3	1	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62	..	..	..
New Jersey	236	1	..	1	..	..	1	2	3	1	1	..	7	2	4	1	1	6	2	7	1	3	1	..	5	..	..	..	..	..	..	84	..	..	1	..	28	..	..	..	7	1	..	1	1	..	1	..	..	3	..	..	..
New Mexico	29	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	1	1	1	1	1	1	..	..	1	..	..	..	..	..	..	3	..	..	4	..	1	..	..	..	3	4	..	..	..	..	..	1	..	..	3	..	..	..
New York	512	..	..	..	8	..	..	..	1	..	..	..	3	7	..	..	..	5	..	23	..	6	2	..	8	..	2	..	..	..	..	2	..	..	6	..	4	..	4	1	2	..	1	5	..	1	..	..	23	..	..	..
North Carolina	64	..	..	1	..	1	..	..	..	..	6	..	1	..	..	..	..	1	..	1	..	2	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North Dakota	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio	127	..	..	3	4	2	..	..	..	..	2	..	6	3	2	3	6	1	..	3	..	11	1	..	14	..	1	..	..	1	..	12	1	1	..	..	..	12	..	1	..	10	..	..	..	3	..	2	3	..	..	19	..	..	..
Oklahoma	41	..	..	3	..	3	..	..	..	..	1	..	2	..	1	4	1	2	..	..	..	2	..	..	4	..	..	..	..	1	..	..	..	..	2	..	1	..	..	..	2	3	..	..	..	2	..	..	..	..	6	..	..	..
Oregon	37	..	..	..	2	1	..	..	..	..	1	..	5	1	3	..	..	..	..	..	..	1	2	..	6	..	3	..	..	..	..	2	..	..	7	3	..	7	..	..	..	2	2	..	..	2	1	2	..	..	2	..	..	..
Pennsylvania	92	..	..	..	2	1	..	..	1	..	..	..	1	1	5	..	1	..	..	2	..	4	..	..	2	..	1	..	..	10	..	7	3	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rhode Island	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	2	..	..	..	7	..	..	2	..	..	..	..	2	..	..	..
South Carolina	29	1	..	..	..	..	..	..	..	..	2	..	2	..	..	1	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	1	..	..	2	..	..	..	..	..	..
South Dakota	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	4	..	..	..
Tennessee	45	1	..	1	2	..	..	..	1	..	3	..	2	1	3	..	1	2	..	1	..	2	..	2	3	..	..	..	..	1	..	6	1	..	3	..	..	2	..	1	15	..	..	1	..	3	..	6	..	4	1	..	..
Texas	145	2	..	4	..	2	..	..	1	..	2	..	9	4	4	2	1	14	2	3	..	5	2	4	8	..	1	..	..	1	..	14	2	..	18	3	..	5	..	1	1	15	..	..	1	..	3	..	..	1	5	..	..	..
Utah	33	..	..	..	3	..	1	..	..	..	1	..	9	1	..	..	1	1	..	..	..	1	..	..	3	..	1	..	..	..	..	3	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	27	..	1	..
Vermont	35	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	4	2	..	2	..	..	2	..	1	..	5	..	..	1	..	..	2	..	2	3	..	..	..
Virginia	44	..	..	1	1	..	..	..	8	..	2	..	1	..	..	1	..	..	..	2	..	2	..	..	2	..	..	..	..	..	..	..	..	..	2	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..
Washington	53	..	..	..	5	1	..	..	..	..	..	..	..	2	..	..	1	1	..	1	..	4	8	..	3	1	1	..	..	..	..	..	..	..	4	3	1	6	..	..	..	..	2	1	..	..	4	..	..	3	..	..	..
West Virginia	17	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	1	..	1	1	..	..	..	..	2	..	..	..	..	..	..	..	1	..	2	..	1	3	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..
Wisconsin	52	..	..	..	3	1	..	..	..	..	..	..	7	..	2	..	..	..	..	..	2	4	..	12	..	3	..	..	..	..	4	..	..	..	..	..	..	..	..	..	1	..	1	..	..	4	..	..	..	..	..	..	..
Wyoming	6	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	10	..	..	8
U.S.Terr. & Poss.	23	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	3,612	15	3	37	60	30	11	3	60	6	42	2	224	59	62	48	37	67	11	109	18	117	80	20	136	6	59	1	0	37	2	298	32	4	146	27	17	175	4	15	5	129	45	10	11	63	23	22	59	1	26	1,103	4	8	14
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55

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Jersey, while that state endorsed credentials of 236 from outside the state. On the other hand Illinois endorsed only 64 credentials from other sources, while other states accepted 224 candidates previously licensed in Illinois. No physician holding a New Hampshire certificate applied for registration in another state during the year, and only 1 physician from Nevada and Wyoming sought licensure elsewhere. Florida, with no reciprocity or endorsement policies, licensed no one except by the regular examination procedures.

Eight were admitted to private practice in the Virgin Islands on presentation of satisfactory credentials. Twenty-six medical officers of one of the government services received licenses without written examination in seven states: California 11, Texas 4, Wisconsin 4, Illinois 3, Virginia 2, Kentucky 1 and Utah 1.

Five physicians who were legal residents of Pennsylvania and were qualified to take the state board examination but were prevented from doing so by their service in the armed forces were licensed without examination in Pennsylvania under the provisions of Act No. 132, approved April 25, 1945.

Two physicians were licensed in the District of Columbia and 1 each in California and New York on credentials from one of the possessions of the United States. The foreign credentials of 8 physicians were accepted as a basis for licensure without examination: Arizona (Canadian license), Delaware (England), New York (Canada, Manitoba, Austria, France and Germany) and Vermont (Quebec).

Included in the table are 35 osteopaths licensed without examination. These individuals secured licenses in the District of Columbia, Indiana, Ohio, Oregon, Texas and Wisconsin.

Diplomates of the National Board of Medical Examiners were registered on the basis of this credential by forty licensing boards in the United States and by the boards of Hawaii and Puerto Rico last year. There were 1,103 individuals who presented these credentials. Of all who were registered by reciprocity and endorsement nearly one third presented National Board credentials.

The number of physicians securing licenses by reciprocity or by endorsement has been steadily increasing in recent years. The figure for 1945 (3,612) represented 1,023 more licenses issued by this method than in 1944.

LICENTIATES REPRESENTING ADDITIONS TO THE MEDICAL PROFESSION

Licentiates of 1945 who received their first license to practice medicine and surgery during the year and therefore represent additions to the physician population of the United States, Alaska, Hawaii, Puerto Rico and the Virgin Islands are recorded in table 11. The figures in this compilation represent candidates examined in 1945 and immediately licensed, also those examined in previous years whose licenses were withheld for lack of internship, citizenship and other technicalities and issued in 1945, and those without a state license who were during the year certified on the basis of the examinations of the National Board of Medical Examiners, government services or Canadian and foreign credentials. The majority licensed by examination represent recent graduates who received their training under the A. S. T. or Navy V-12 programs and will enter active duty with the Armed forces on completion of an internship. Therefore only a small percentage of the 1945 licentiates who received licenses after examination can be considered to be additions to the present civilian physician population.

There were 5,707 additions to the medical profession in 1945. The number removed by death in the United States, possessions and temporary foreign in the same period was 3,815.[2] It would appear therefore that the physician population in the United States last year was increased by 1,892. There was a decrease of 1,252 new licentiates as compared with the previous year's figure of 6,959, but the 1945 figure corresponds to the annual prewar excess of physicians added to the profession over deaths. While a decrease in the civilian physician population had resulted because of the active military service obligation of recent graduates there has been an increase in the number of physicians licensed without examination, as seen in table 1, as a result of the veteran medical officers returning to civilian practice.

TABLE 11.—*Licentiates Representing Additions to the Medical Profession, 1945*

	Examination	Reciprocity and Endorsement	Total
Alabama	19	3	22
Arizona	5	2	7
Arkansas	123	1	124
California	438	34	472
Colorado	61	1	62
Connecticut	27	31	58
Delaware	5	1	6
District of Columbia	13	38	51
Florida	26	0	26
Georgia	124	1	125
Idaho	4	0	4
Illinois	348	9	357
Indiana	229	3	232
Iowa	91	5	96
Kansas	91	1	92
Kentucky	75	0	75
Louisiana	203	0	203
Maine	5	3	8
Maryland	152	6	158
Massachusetts	69	121	190
Michigan	178	4	182
Minnesota	160	5	165
Mississippi	48	1	49
Missouri	238	2	240
Montana	3	0	3
Nebraska	73	0	73
Nevada	1	0	1
New Hampshire	6	3	9
New Jersey	89	30	119
New Mexico	0	0	0
New York	246	370	616
North Carolina	132	16	148
North Dakota	0	0	0
Ohio	321	7	328
Oklahoma	67	2	69
Oregon	20	2	22
Pennsylvania	408	22	430
Rhode Island	10	11	21
South Carolina	54	0	54
South Dakota	5	0	5
Tennessee	242	2	244
Texas	291	2	293
Utah	26	2	28
Vermont	14	16	30
Virginia	37	1	38
Washington	7	0	7
West Virginia	12	0	12
Wisconsin	90	3	93
Wyoming	0	0	0
Alaska, Hawaii, Puerto Rico, Virgin Islands	33	7	40
Totals	4,939	768	5,707

The greatest number of physicians in any one state, 616, was added to the profession in New York. Both California and Pennsylvania added more than 400 and Illinois and Ohio more than 300. By comparison with 1944 figures [1] it can be noted that more were licensed and represent additions to the profession in 1945 in the cases of Alabama, Arkansas, California, Connecticut, District of Columbia, Florida, Illinois, Indiana, Iowa, North Carolina, Tennessee, Texas, Utah, Ver-

2. J. A. M. A. **130**: 148 (Jan 19) 1946.

mont, Wisconsin and the territories and possessions. The comparison of figures with 1944 showing increases in a number of states is significant since figures for the previous year represented two graduating classes in many instances. Indiana University was the only school that had two classes examined in 1945. No one was added to the profession as a first licentiate in New Mexico, North Dakota and Wyoming, while in thirteen states between 100 and 299 received initial licenses. Twenty-seven states, the District of Columbia, Alaska, Hawaii, Puerto Rico and the Virgin Islands added fewer than 100. The 5,707 licentiates constituting additions to the medical profession last year represented 4,939 who secured their licenses by examination and 768 by endorsement of credentials. The latter represent mainly diplomates of the National Board of Medical Examiners.

TABLE 12.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions, 1945*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	5	3	8
New Hampshire	6	3	9
Vermont	14	16	30
Massachusetts	69	121	190
Rhode Island	10	11	21
Connecticut	27	31	58
	131	185	316
Middle Atlantic			
New York	246	370	616
New Jersey	89	30	119
Pennsylvania	408	22	430
	743	422	1,165
East North Central			
Ohio	321	7	328
Indiana	229	3	232
Illinois	348	9	357
Michigan	178	4	182
Wisconsin	90	3	93
	1,166	26	1,192
West North Central			
Minnesota	160	5	165
Iowa	91	5	96
Missouri	258	2	260
North Dakota	0	0	0
South Dakota	5	0	5
Nebraska	73	0	73
Kansas	91	1	92
	678	13	691
South Atlantic			
Delaware	5	1	6
Maryland	152	6	158
District of Columbia	13	38	51
Virginia	37	1	38
West Virginia	12	0	12
North Carolina	132	16	148
South Carolina	54	0	54
Georgia	124	1	125
Florida	26	0	26
	555	63	618
East South Central			
Kentucky	75	0	75
Tennessee	242	2	244
Alabama	19	3	22
Mississippi	48	1	49
	384	6	390
West South Central			
Arkansas	123	1	124
Louisiana	203	0	203
Oklahoma	67	2	69
Texas	291	2	293
	684	5	689
Mountain			
Montana	3	0	3
Idaho	4	0	4
Wyoming	0	0	0
Colorado	61	1	62
New Mexico	0	0	0
Arizona	5	2	7
Utah	26	2	28
Nevada	1	0	1
	100	5	105
Pacific			
Washington	7	0	7
Oregon	20	2	22
California	438	34	472
	465	36	501
Territories and Possessions			
Alaska	0	0	0
Hawaii	3	0	3
Puerto Rico	30	7	37
Virgin Islands	0	0	0
	33	7	40
Totals	4,939	768	5,707

Increases in the physician population arranged in nine geographic divisions are shown in table 12. The Middle Atlantic and East North Central group of states added the greatest number, 1,165 and 1,192 respectively. More than 600 were added in three groups—the West North Central, South Atlantic and West South Central states. The fewest number of physicians, 105, were added to the medical profession in the Mountain states. Two states in this group—New Mexico and Wyoming—did not add a single physician to the medical profession last year in this compilation of first licenses.

In eleven years there were 66,646 physicians added to the profession (table 13); 61,041 were licensed after a successful written examination and 5,605 by reciprocity or endorsement. In the same period 99,355 licenses were issued, 68,726 by examination and 30,629 by endorsement of credentials. Thus 32,709 licenses were obtained in this eleven year period by physicians who had previously been licensed to practice medicine.

TABLE 13.—*Licentiates Representing Additions to the Medical Profession, 1935-1945*

Year	Examination	Reciprocity and Endorsement	Total
1935	5,099	411	5,510
1936	5,548	629	6,177
1937	5,812	612	6,424
1938	5,759	501	6,260
1939	5,584	460	6,044
1940	5,432	455	5,887
1941	5,239	473	5,712
1942	5,558	454	6,012
1943	5,582	372	5,954
1944	6,489	470	6,959
1945	4,939	768	5,707
Totals	61,041	5,605	66,646

Estimated figures indicate that on Jan. 1, 1946 the number of physicians in continental United States including those licensed in 1945 and those still in military service was 195,899. With the rapid discharge of medical officers in the past nine months it can be assumed that the civilian physician population will reach its prewar level within a reasonable period.

LICENSURE UNDER THE ACCELERATED PROGRAM

The majority of physicians who obtained their professional training under the wartime accelerated program have thus far experienced no difficulty in obtaining licensure on that account. All states, as well as the District of Columbia, Alaska, Hawaii and Puerto Rico, made adjustments in their licensure legislation or practices, where these were required, to facilitate the licensure of graduates under the accelerated program. Legislation in four instances (District of Columbia, Georgia, Illinois and Minnesota) is such as might not provide for students who have completed all their medical school work under the accelerated program and spend a week or two less than thirty-six months in a medical school.

PREMEDICAL TRAINING

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college

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training, and in 1938 three years was recommended. With the exception of California, Connecticut and Nebraska (table 14) the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college. In November 1942

TABLE 14.—*Requirements of Preliminary Training by Medical Licensing Boards*

Two Years or More of College		
Alabama	Louisiana	Oklahoma
Alaska	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Massachusetts	Puerto Rico
Canal Zone	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Missouri	Tennessee
Florida	Montana	Texas
Georgia	Nevada	Utah
Hawaii	New Hampshire	Vermont
Idaho	New Jersey	Virginia
Illinois	New Mexico	Washington
Indiana	New York	West Virginia
Iowa	North Carolina	Wisconsin
Kansas	North Dakota	Wyoming
Kentucky	Ohio	
One Year of College		
California	Connecticut *	
High School Graduation or Its Equivalent		
Nebraska		

* Two year college requirement for graduates after 1946.

the Council on Medical Education and Hospitals recommended that for the duration of the war premedical education, including satisfactory courses in physics, biology and inorganic and organic chemistry, be included within two calendar years. Such a program was adopted by practically all medical schools of the country. Many medical schools have already returned to the prewar premedical requirement of three years of premedical training.

The Army Specialized Training and Navy V-12 premedical programs called for less than two years of college training, but in both of these programs the studies were continuous and provided for the student carrying more than the normal peacetime studies per semester. Both the army and navy programs provided for work well in excess of the sixty semester hours constituting the normal two academic years of medical study. The information received from those states whose licensure laws include specific premedical requirements seems to indicate that there should be no licensure difficulties encountered by students whose premedical

TABLE 15.—*Medical Schools Requiring an Internship*

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine
University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

work was taken under the Army Specialized Training or Navy V-12 or comparably accelerated civilian programs.

REQUIRED INTERNSHIPS

In tables 15 and 16 are listed the medical schools and licensing boards now requiring internships for the M.D. degree and licensure respectively. Six schools in the United States and four in Canada require an internship for graduation. Although relatively few schools require the internship for the M.D. degree, this is a requirement for licensure by twenty-three state medical licensing boards, the Arkansas and Connecticut homeopathic medical examining boards, the District of Columbia, Alaska, the Canal Zone, Hawaii and Puerto Rico. Table 17 lists these states and indicates the relationship of this requirement to the nine month internship. Ten states, the Connecticut homeopathic examining board, Alaska, the Canal Zone, Hawaii and Puerto Rico will accept a nine month internship as fulfilling the internship requirement. Eleven states and the District of Columbia require an additional three months in a civilian hospital

TABLE 16.—*Medical Licensing Boards Requiring an Internship of All Candidates*

Alabama	Montana	Puerto Rico
Alaska	Nevada	Rhode Island
Canal Zone	New Hampshire	South Dakota
Delaware	New Jersey	Utah
District of Columbia	New Mexico	Vermont
Hawaii	North Dakota	Washington
Idaho	Oklahoma	West Virginia
Illinois	Oregon	Wisconsin
Iowa	Pennsylvania	Wyoming
Michigan		

Some states require the internship of graduates of medical faculties abroad and of reciprocity or endorsement applicants.

Alabama, Delaware, Illinois, Iowa, Michigan, North Dakota, Pennsylvania, Rhode Island, Utah, Washington and Wisconsin require the internship to be a rotating service, while New Jersey recommends this type of service.

or military service but will permit applicants for licensure to write the examination on completion of the nine month internship but will withhold the license until this is completed. In two states physicians are not eligible to take the examination until after com-

TABLE 17.—*Relationship of the Nine Month Internship to Licensure*

	Additional Three Months in Civilian Hospital or Military Service Required	
Accepted as Fulfilling Internship Requirement	Will Give Examination at End of Nine Months	Will Not Give Examination Until Completion of Year's Service
Alaska	Alabama [1,2]	Arkansas (homeo. board)
Canal Zone	Delaware	Illinois [2]
Connecticut (homeo. board)	Dist. of Columbia [1]	New Mexico
Hawaii	North Dakota	
Idaho	Oregon [1,2]	
Iowa [1]	Rhode Island [1]	
Michigan [1]	South Dakota [1,2]	
Montana [1]	Utah [1,2]	
Nevada	Vermont [1]	
New Jersey	Washington [1]	
New Hampshire	Wisconsin	
Oklahoma [1]	Wyoming	
Pennsylvania [1]		
Puerto Rico		
West Virginia		

1. Will also give examination on completion of the medical course but withhold license until internship is completed.

2. Military medical service must be in a military hospital.

Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.

Alabama, Delaware, Illinois, Iowa, Michigan, North Dakota, Pennsylvania, Rhode Island, Utah, Washington and Wisconsin require the internship to be a rotating service, while New Jersey recommends this type of service.

pletion of a year's internship, three months of which may be in the military service. This is true also of the homeopathic examining board in Arkansas.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require an internship withhold the licenses of candidates from schools requiring an internship for the M.D. degree until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

The licensing boards of Alabama, Delaware, Illinois, Iowa, Michigan, North Dakota, Pennsylvania, Rhode

Island, Utah, Washington and Wisconsin require the internship to be a rotating service, while New Jersey recommends this type of service.

A few of the medical schools and licensing boards maintain their own list of hospitals acceptable for intern training, but the list of approved internships compiled by the Council on Medical Education and Hospitals of the American Medical Association is generally used.

LICENSURE FOR THE RELOCATED PHYSICIAN

To assist the physician returning to civilian practice or in locating in areas where there are shortages of physicians, the licensing boards of fifteen states, Alaska and Puerto Rico in 1945 provided for the issuance of temporary permits, usually without immediate examination. These states, the length of the validity of the permit and the number of permits granted during the last calendar year are shown in table 18. Four states

TABLE 18.—*Temporary Permits, 1945*

State	Permit Valid For:	Permits Granted
Alaska	6 mos.	10
Arizona	3 mos.	57
Florida [1]	.....	18
Georgia	Next board meeting	36
Kentucky	1-5 yrs.	6
Louisiana	Next board meeting	37
Maine	Duration of war	7
Mississippi	Next board meeting	..
Nevada	Until June 30, 1947	14
New Hampshire	Varies	..
New Mexico	Next board meeting	..
North Dakota	Next board meeting	..
Pennsylvania	6 mos. after cessation of hostilities	6
Puerto Rico	6 mos. after cessation of hostilities	12
Virginia	Next board meeting	..
Washington	Next board meeting	110
West Virginia	Next board meeting	10
Total		323

1. Temporary permit regulation terminates July 1, 1946.

(Arkansas, Delaware, Kansas and Wyoming) discontinued this emergency measure in 1945, and the Florida regulation will terminate on July 1, 1946. All licenses in Nevada in the past several years have been issued as temporary licenses which will expire on June 30, 1947. The Nevada board held a meeting on Feb. 4, 1946 to reconsider the status of physicians holding these temporary licenses with a view to granting permanent licenses. There were 323 temporary permits granted in 1945 by seventeen licensing boards.

The Bureau of Information of the American Medical Association is helping veteran medical officers with their medical practice and relocation problems. This is done through close association with state and county medical societies as an entirely voluntary effort without any attempt to direct the location of a physician.

An officer can obtain a brief but comprehensive picture of the economic status of any particular area he is interested in from the data contained on county summary sheets. This includes data on population, principal cities, physicians, hospital and medical facilities and pertinent economic, social and financial information. A copy of this summary sheet is forwarded to the inquirer, and a copy of the letter to him is sent to the state and county medical society concerned.

In addition to the information contained on the summary sheets, other data are available for interested officers. Requests for full or part time salaried medical positions from industries, institutions and other organizations, requests from practicing physicians for associates, needs for specialists and requests of individuals for practices are cross filed and kept current by a return post card system which keeps the Bureau of Information informed of final locations, filling of vacancies and the securing of physicians.

At the request of the Committee on Postwar Medical Service, the secretary of the Federation of State Medical Boards of the United States canvassed the respective licensing boards of the country on several points pertaining to the licensure of returning medical officers. The report of the secretary to the federation on Feb. 12, 1946 [3] is as follows:

1. Medical officers desiring to relocate after separation from military service will be required to satisfy peacetime licensure regulations in the states concerned, except in New York, North Dakota and Pennsylvania, where special consideration is given to such applicants.

2. Medical officers who are graduates of unapproved medical schools will experience difficulty in obtaining licensure in any state except Illinois and Massachusetts, although New York is giving special consideration to medical officers.

3. Medical officers who entered military service without obtaining a license to practice in any state, with the exception of diplomates of the National Board of Medical Examiners, will be required to take the regular licensure examination in the state where they expect to practice.

4. A limited number of states have provision for temporary licensure, but only for the duration of the war and six months thereafter.

5. As regards the licensure requirement for hospital residents which prevails in twelve states and the District of Columbia, and to a limited extent in four more states, it seemed evident that hospital residencies desired for returning medical officers should be regarded as a form of postgraduate or refresher courses of training, and therefore these physicians might be relieved of licensure requirements particularly if restriction of practice is rigidly observed. Several state boards are considering the matter in this light.

At its December 1945 meeting the Council on Medical Education and Hospitals of the American Medical Association passed the following resolution:

The Council on Medical Education and Hospitals of the American Medical Association does not intend to remove any hospital from the lists of hospitals approved for internships or residencies which furnishes teaching facilities to any veteran medical officer who is eligible for educational benefits under the Servicemen's Readjustment Act, provided the veteran is legally eligible for medical licensure in the state in which the hospital is located.

This action of the Council was approved by the Federation of State Medical Boards at its meeting on Feb. 12, 1946. The American College of Surgeons is also in accord with this policy of the Council on Medical Education and Hospitals.

TABLE 19.—*States Requiring Annual Registration*

Alaska	Idaho	New York *
Arizona	Iowa	North Dakota
Arkansas	Kansas	Oklahoma
California	Louisiana	Oregon
Colorado	Minnesota	Pennsylvania
Connecticut	Missouri *	Texas
Delaware	Montana	Utah
District of Columbia	Nebraska	Washington
Florida	Nevada	Wisconsin
Georgia	New Mexico	Wyoming
Hawaii		

* Biennial registration.

ANNUAL REGISTRATION

Twenty-eight states, the District of Columbia, Alaska and Hawaii require physicians to register their license annually. In table 19 are listed the licensing boards

3. Fed. Bull. **3**: 68 (March) 1946.

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which exact this requirement. Some of these boards require such registration whether or not physicians reside in the state. The fee is generally $2.

CANDIDATES EXAMINED, 1941-1945

The numbers of candidates examined for medical licensure in the United States and its territories and possessions for the last five years, 1941-1945, are given

TABLE 20.—*Candidates Examined, 1941-1945*

	1941		1942		1943		1944		1945		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	%F
Alabama	26	3	34	0	20	0	20	0	23	0	123	3	2.4
Arizona	17	0	9	0	6	0	11	0	11	0	54	0	0.0
Arkansas	60	0	62	0	65	0	115	0	65	0	367	0	0.0
California	400	11	459	15	507	12	458	14	467	11	2,291	63	2.7
Colorado	54	4	68	3	113	3	79	3	66	0	380	13	3.3
Connecticut	80	36	59	31	62	12	34	18	31	12	266	109	29.1
Delaware	18	0	7	0	9	0	27	0	5	0	66	0	0.0
District of Columbia	33	0	27	0	42	2	36	2	20	1	158	5	3.3
Florida	143	7	110	8	129	8	130	9	198	37	710	69	8.9
Georgia	94	2	96	0	105	0	125	1	124	0	634	3	0.5
Idaho	30	0	12	1	9	1	15	0	18	0	84	2	2.3
Illinois	474	46	421	48	391	29	218	25	415	31	1,919	179	8.5
Indiana	120	0	128	0	253	0	126	0	231	0	858	0	0.0
Iowa	67	0	44	1	106	8	83	8	68	1	368	18	4.7
Kansas	92	0	99	0	86	0	179	0	101	0	557	0	0.0
Kentucky	84	0	86	0	161	1	78	0	75	0	484	1	0.2
Louisiana	145	1	175	0	228	2	255	4	208	1	1,011	8	0.8
Maine	28	12	42	6	29	3	13	3	9	3	121	27	17.1
Maryland	177	9	165	11	206	14	151	4	193	8	892	46	4.5
Massachusetts	254	288	201	251	257	294	162	261	124	175	998	1,269	60.0
Michigan	239	0	196	0	266	2	189	0	194	0	1,117	2	0.2
Minnesota	240	0	199	1	280	0	197	0	217	0	1,143	1	0.1
Mississippi	38	0	43	2	113	1	71	0	50	0	315	3	0.9
Missouri	196	0	182	1	421	1	207	0	258	1	1,264	3	0.2
Montana	7	1	7	1	4	0	3	0	2	0	23	2	8.0
Nebraska	92	0	77	2	155	15	81	11	74	7	479	35	6.8
Nevada	5	2	1	0	0	1	1	0	1	1	8	4	33.3
New Hampshire	10	1	3	3	5	4	9	4	6	1	33	13	28.3
New Jersey	155	29	110	10	150	11	104	11	95	9	614	70	0.2
New Mexico	2	0	0	0	1	0	0	0	0	0	3	0	0.0
New York	888	968	1,071	600	633	445	454	362	287	248	3,333	2,681	44.6
North Carolina	54	0	77	0	115	0	105	0	132	1	483	1	0.2
North Dakota	15	1	6	1	1	0	3	0	4	0	29	2	6.5
Ohio	263	14	274	6	622	22	329	25	325	13	1,813	80	4.2
Oklahoma	54	0	54	0	114	0	72	0	69	0	363	0	0.0
Oregon	22	0	45	0	52	5	11	5	19	1	149	11	6.9
Pennsylvania	446	18	456	21	475	12	853	20	426	17	2,656	84	3.1
Rhode Island	22	0	35	0	20	0	13	3	6	0	96	3	3.0
South Carolina	45	0	46	0	91	0	51	1	58	0	291	1	0.3
South Dakota	9	0	5	0	6	0	3	0	6	0	29	0	0.0
Tennessee	190	4	190	0	201	0	237	0	193	2	1,020	6	0.6
Texas	177	13	289	15	195	4	303	3	228	7	1,192	42	3.4
Utah	15	0	14	0	27	0	30	0	13	0	99	0	0.0
Vermont	18	0	24	1	19	0	7	0	2	0	70	1	1.4
Virginia	146	3	145	1	264	1	158	9	39	2	752	16	2.1
Washington	69	1	60	0	54	1	75	0	34	0	292	2	0.7
West Virginia	34	0	27	0	23	0	24	0	20	0	128	0	0.0
Wisconsin	120	0	124	1	176	0	74	0	96	0	590	1	0.2
Wyoming	8	0	0	0	0	0	0	0	0	0	8	0	0.0
U. S. Terr. & Poss.	63	8	54	5	14	2	39	0	35	2	205	17	7.7
Totals Examined	7,529		7,224		8,398		6,814		5,929		35,904		
Passed	6,057		6,118		7,484		6,008		5,341		31,008		
Failed	1,482		1,106		914		806		588		4,896		
Percentage Failed	19.7		15.3		10.9		11.9		9.9		13.6		

in table 20. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five year period and the percentage of candidates who failed are also given.

During this five year period 35,904 examinations were given; 31,008 were successful tests and 4,896, 13.6 per cent, failed. New York leads in the number of examinations given. In this state in the last five years 3,333 passed the licensure examination. Other states passing more than 2,000 included Pennsylvania 2,656 and California 2,291. More than 1,000 were examined in eight other states and passed, namely Illinois, Louisiana, Michigan, Minnesota, Missouri, Ohio, Tennessee and Texas.

The greatest percentage of failures, 60.0, occurred in Massachusetts. The high percentage in this state is due to the fact that, by law, the licensing board admitted to its examinations the graduates of unapproved medical schools and graduates of osteopathic schools, many of whom repeatedly fail. A recent amendment to the medical practice act provided for a state approving authority. This authority has ruled that students matriculated in institutions not meeting the standards of the authority after Jan. 1, 1941 will not be eligible to take the licensing examination. New York had a failure percentage of 44.6, occasioned in large part by the admittance to examination of a considerable number of graduates of foreign medical schools, who likewise repeatedly fail in large numbers. The numbers of such graduates admitted to licensure has been decreasing in the last few years. Other high percentages of failure occurred in Connecticut, Maine, Nevada and New Hampshire. On the other hand, thirty-seven states failed less than 5 per cent in the five year period. These included eleven states which had no failures: Arizona, Arkansas, Delaware, Indiana, Kansas, New Mexico, Oklahoma, South Dakota, Utah, West Virginia and Wyoming. The percentage of failures in all states has decreased from 19.7 in 1941 to 9.9 in 1945. The lowest percentage of failures in this five year period occurred in 1945, when 9.9 per cent failed.

These figures represent examinations given and not individuals. A candidate who fails more than once in a state in a given year is counted only once, but

TABLE 21.—*Registration, 1904-1945*

Year	Examined	Passed	Percentage Failed	Reciprocity or Endorsement	Total Registered
1904	7,656	5,893	19.3	1,005	6,698
1905	7,178	5,688	20.8	394	6,082
1906	8,040	6,373	20.7	1,502	7,875
1907	7,279	5,731	21.3	1,427	7,158
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,011	5,719	18.4	1,640	7,359
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,273	6,740
1913	6,453	5,253	18.6	1,292	6,545
1914	5,379	4,379	21.5	1,439	5,818
1915	5,334	4,307	15.5	1,599	5,906
1916	4,878	4,151	14.9	1,353	5,504
1917	4,753	4,084	14.1	1,360	5,444
1918	3,667	3,184	13.2	1,047	4,231
1919	4,750	4,074	14.2	2,546	6,620
1920	4,796	4,062	15.3	2,558	6,620
1921	4,825	4,228	12.4	2,186	6,414
1922	4,031	3,539	12.2	2,073	5,612
1923	4,727	4,028	14.8	2,405	6,433
1924	5,392	4,756	11.8	1,923	6,679
1925	6,002	5,450	9.2	1,861	7,311
1926	5,770	5,314	7.9	1,955	7,269
1927	5,389	5,002	7.2	2,176	7,178
1928	5,458	5,090	6.7	2,228	7,318
1929	5,629	5,282	6.2	2,420	7,702
1930	5,571	5,255	5.7	2,366	7,621
1931	5,611	5,263	6.2	2,211	7,476
1932	5,673	5,247	7.6	1,885	7,132
1933	5,678	5,344	7.6	1,989	7,233
1934	6,145	5,628	8.4	2,161	7,789
1935	6,443	5,859	9.1	2,196	8,055
1936	6,917	6,223	10.0	2,775	8,998
1937	7,334	6,604	10.0	3,203	9,807
1938	7,461	6,589	11.7	2,956	9,545
1939	7,754	6,493	16.3	2,872	9,365
1940	7,925	6,290	20.7	2,865	9,155
1941	7,529	6,057	19.7	2,759	8,816
1942	7,224	6,118	15.4	2,469	8,587
1943	8,398	7,484	10.9	2,237	9,821
1944	6,814	6,008	11.9	2,589	8,597
1945	5,929	5,341	9.9	3,612	8,953

should he also fail in a succeeding year he is counted in that year also. The same is true of successful candidates who migrate to other states. This group represents a recapitulation of the statistics computed annually and assembled for comparative purposes. It gives only a fair approximation of the number of physicians added to the profession in five years by the written examination method. Table 13, page 122, gives the corrected compilation of the number of physicians representing additions to the medical profession.

REGISTRATION, 1904-1945

A study of totals and percentages for forty-two years (1904-1945) is included in table 21. This tabulation covers physicians registered by written examination and by reciprocity or endorsement of credentials. There is no definite trend in the numbers annually registered from 1904 to 1933, although in 1918 the number registered dropped to the all time low record of 4,231. After 1933 there was an upward trend for a time, followed by a decline during the years 1941 and 1942. The sudden withdrawal of more than 1,200 in 1918 was due to the sudden withdrawal of physicians and recent graduates from civilian life during World War I.

TABLE 22.—*Graduates of Approved Schools and Others Registered, 1922-1945*

	Graduates of Approved Schools		Others		
	Number	Per Cent of Total	Number	Per Cent of Total	Totals
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,687	85.1	992	14.9	6,679
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	768	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,093	91.0	699	9.0	7,792
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,675	93.7	457	6.3	7,132
1933	6,774	93.7	459	6.3	7,233
1934	7,172	92.1	617	7.9	7,789
1935	7,362	91.5	693	8.5	8,055
1936	7,802	88.2	1,066	11.8	8,868
1937	8,389	85.6	1,418	14.4	9,807
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,780	85.0	1,375	15.0	9,155
1941	7,767	88.1	1,049	11.9	8,816
1942	7,289	84.9	1,298	15.1	8,587
1943	8,634	87.8	1,187	12.2	9,821
1944	7,727	89.9	870	10.1	8,597
1945	8,225	91.9	728	8.1	8,953
Totals	170,206	88.4	22,246	11.6	192,452

TABLE 23.—*Graduates of Unapproved School Registered, 1940-1945*

	Examination						Reciprocity and Endorsement						
	1940	1941	1942	1943	1944	1945	1940	1941	1942	1943	1944	1945	Total
California	1	1	0	0	0	0	0	0	0	0	0	4	6
Illinois	48	51	51	57	45	115	0	0	0	0	0	0	367
Indiana	0	0	0	0	0	0	2	0	1	0	0	0	3
Iowa	0	0	0	0	0	0	0	1	0	0	0	0	1
Kentucky	0	0	0	2	0	0	2	0	0	0	0	0	4
Massachusetts	98	90	105	177	102	28	0	0	0	0	0	0	610
Mississippi	0	0	1	0	1	0	0	0	0	0	0	0	2
Missouri	0	1	0	1	0	0	0	0	0	0	1	1	4
Nevada	0	0	0	0	0	0	0	0	0	0	1	2	3
New Hampshire	0	0	0	0	0	0	0	0	0	0	0	1	1
New Jersey	0	0	0	0	0	0	13	8	0	0	0	0	21
New Mexico	0	0	0	0	0	0	2	0	0	0	0	1	3
New York	0	0	0	0	0	0	8	0	0	0	0	0	8
Pennsylvania	5	0	0	0	0	0	0	0	0	0	0	0	5
Texas	6	0	0	0	0	0	0	0	0	0	0	0	6
Virginia	0	0	0	1	5	3	0	0	0	0	0	0	9
Wisconsin	0	0	0	0	0	0	0	0	0	1	0	1	2
Hawaii	0	1	0	1	0	0	0	0	0	0	0	0	2
Puerto Rico	1	0	0	0	0	0	0	0	0	0	0	0	1
Totals	159	144	157	239	153	156	27	9	1	1	2	10	1,058

By contrast, in 1943 the number registered increased 1,234 over the preceding year. The increase is a result of the accelerated curriculum and the universal effort on the part of the medical leaders of the country to maintain a steady flow of physicians for both civilian and military practice. In 1943 more physicians were examined than in any previous year. A large majority of these were recent graduates who secured licenses before assuming military duties.

There was a large increase in registration on the basis of credentials in 1945. It is presumed that medical officers returning to civilian practice are making use of this means of obtaining licensure if they are planning to relocate rather than return to their former practice.

The percentage of failures gradually dropped from 19.3 in 1904, when a great many proprietary medical schools were functioning, to 5.7 in 1930. Improvements in the standards of medical education are reflected in this decrease of failures in licensing examinations. With the migration of European physicians to this country beginning in 1936 and the resultant licensure difficulties, the proportion of failures began to rise, reaching a peak of 20.7 per cent in 1940. In the last two years the number of foreign graduates and graduates of unapproved schools applying for licensure has considerably decreased.

In analyzing this table it should be remembered that the figures represent multiple examinations by individuals in some instances rather than actual additions to the profession.

GRADUATES OF APPROVED SCHOOLS AND OTHERS REGISTERED, 1922-1945

The educational fitness of physicians registered for the practice of medicine in twenty-four years is recorded in table 22. In the computation of these figures, schools rated as class A and B by the Council on Medical Education and Hospitals of the American Medical Association since 1907 are classified as approved. In the column "Others" are included individuals who graduated prior to 1907, when the first classification of schools was made, graduates of foreign faculties of medicine, class C graduates, osteopaths given recognition by medical licensing boards and graduates of schools not approved by the Council. In 1928 the classification A, B and C by the Council was discontinued and a list of approved medical schools has since been maintained.

There were 8,953 candidates registered in 1945, of whom 8,225, 91.9 per cent, represented graduates of approved schools and 728, 8.1 per cent, the group designated as others.

In the twenty-four year period 192,452 were registered, including 170,206 approved graduates (88.4 per cent) and 22,246 others (11.6 per cent). Since 1922 the number of graduates of approved schools has increased well beyond 4,500, representing 80 to 90 per cent of those annually registered. Until the influx of foreign graduates in 1936, those in the second group since 1924 have been fewer than 1,000. The number

TABLE 24.—*Graduates of Schools of Osteopathy Registered by Medical Boards, 1940-1945*

	Examination						Reciprocity and Endorsement						
	1940	1941	1942	1943	1944	1945	1940	1941	1942	1943	1944	1945	Total
Colorado	15	2	9	9	7	7	0	0	0	0	0	0	49
Connecticut	0	0	0	5	5	2	0	0	0	0	0	0	12
Delaware	0	0	0	0	3	0	0	0	0	0	0	0	3
Dist. Columbia	1	0	2	0	0	0	0	2	1	0	0	1	7
Indiana	7	8	4	2	3	0	1	3	2	3	3	4	35
Massachusetts	27	26	13	5	4	5	0	0	0	0	0	0	80
Nebraska	0	0	0	6	0	2	0	0	0	1	0	0	9
New Hampshire	2	0	0	0	3	0	2	0	1	1	2	0	11
New Jersey	47	32	9	18	30	15	0	0	0	0	0	0	151
Ohio	0	0	0	158	72	48	0	0	0	0	3	1	282
Oregon	0	2	1	0	0	0	1	2	5	3	8	13	35
Texas	20	13	17	18	38	29	1	1	1	2	1	1	142
Virginia	0	3	0	0	0	0	0	1	0	0	0	0	4
Wisconsin	1	2	5	6	0	1	0	0	1	16	5	15	52
Wyoming	1	0	0	0	0	0	0	0	2	1	2	0	6
Totals	121	83	60	227	165	109	5	9	13	27	24	35	878

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in this group was considerably decreased in 1944, and in 1945 there were 142 fewer registered than in the preceding year.

GRADUATES OF UNAPPROVED SCHOOLS REGISTERED, 1940-1945.

Recorded in table 23 are data regarding graduates of institutions which do not meet the standards outlined by the House of Delegates of the American Medical Association and administered by the Council on Medical Education and Hospitals. This table shows the number of the licensing laws in these two states, which accounted for over 90 per cent of these licenses. However, 81 graduates of substandard schools have been licensed in other states in the past five years.

GRADUATES OF SCHOOLS OF OSTEOPATHY REGISTERED BY MEDICAL EXAMINING BOARDS, 1940-1945.

The numbers of graduates of schools of osteopathy granted the privilege of practicing medicine or surgery or both by the examining boards of fourteen states and the District of Columbia for six years (1940-1945) are given in table 24. There have been 878 such individuals registered since 1940, 765 by examination and 113 by endorsement. In 1945 there were 144 so registered, 109 by examination and 35 without written examination in ten states, namely Colorado, Connecticut, Indiana, Massachusetts, Nebraska, New Jersey, Ohio, Oregon, Texas, Wisconsin, and in the District of Columbia.

Following is a summary of the situation in the fourteen states and the District of Columbia providing for the licensure of osteopaths by the medical examining board:

In Colorado an osteopath receives a license to practice medicine. In Connecticut any registered osteopath

TABLE 25.—*Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada*

	Admitted to Examination	Admitted by Endorsement of State License*	Citizenship	Basic Science Certificate	Internship in Hospital in United States	Further Medical Training	Examination Fee, Dollars	Other Requirements
Alabama	+	..	+	..	+	..	10	1
Arizona	Not accepted							
Arkansas (reg. and homeo. boards)	Not accepted							
California	+	+[27]	..	..	+[18]	+[18]	25	11
Colorado	+	..	1st P	+	..	..	25[4]	..
Connecticut (regular board)	+	..	1st P	+	..	..	25	..
Delaware (regular board)	+	..	+	..	+	..	25	5,22
District of Columbia	+	+[6]	..	+	+	..	25	19
Florida	+	..	+	+	..	+[7]	25	..
Georgia	+	..	+	..	..	+[7]	20	..
Idaho	+	..	+	..	+	..	25	..
Illinois	+	..	1st P	..	+	..	10	8
Indiana	+	+	..	..	..	+[7]	25	..
Iowa	+[10]	..	+	+	+[2]	+[2]	25	..
Kansas	+	+	..	..	..	..	25	13
Kentucky	Not accepted[27]							
Louisiana (reg. and homeo. boards)	Not accepted							
Maine	+	+	+	..	+	..	27	11
Maryland (reg. and homeo. boards)	+	..	1st P	..	+[26]	..	25	19
Massachusetts	+	..	1st P	..	..	..	25	..
Michigan	+	+	+	+	+	+[7]	25	..
Minnesota	Not accepted							
Mississippi	+	..	+	..	+	..	10	3
Missouri	+	+	+	..	+[2]	..	15	..
Montana	Not accepted[23]							
Nebraska	+	+	+	+	..	..	25	..
Nevada	Not accepted							
New Hampshire	+	+[12]	+	..	+	..	20	..
New Jersey	+	+	+	..	+[17]	..	25	..
New Mexico	Not accepted							
New York	+	+	1st P	..	..	..	25	14
North Carolina	Not accepted							
North Dakota	+	..	+	..	+	..	25	11
Ohio	+	+	+	..	..	..	25	..
Oklahoma	Not accepted							
Oregon	Not accepted							
Pennsylvania	+	..	1st P	..	+	..	25	..
Rhode Island	+	..	1st P	+	+[16]	+[16]	20	13
South Carolina	Not accepted[12]							
South Dakota	+	..	1st P	+	+	..	20	..
Tennessee	Not accepted							
Texas	+	..	+	..	..	..	25	..
Utah	Not accepted							
Vermont	Not accepted[23]							
Virginia	+	..	+	15	..	+	25	24
Washington	+	..	1st P	+	+	+[7]	25	9
West Virginia	Not accepted							
Wisconsin	Not accepted							
Wyoming	Not accepted							
Alaska	+	+	+	..	+	..	25	..
Hawaii	+	..	+	..	+	..	25	12
Puerto Rico	+	+	+	..	+	+	25	..

* Refer to chart of "Reciprocity and Endorsement Policies" for further data.

1. Certificate of National Board of Medical Examiners and licensure in country in which school of graduation is located.
2. Internship or one year in medical school in United States.
3. Certificate of National Board of Medical Examiners.
4. For graduates of last five years; if more than five years $50.
5. Residence of one year in Delaware.
6. If similar privileges are accorded licentiates of District of Columbia by licensing agency of jurisdiction from which applicant comes.
7. Senior year in class A medical school in United States.
8. Graduates of European medical colleges after July 1, 1936, Switzerland excepted, shall not be eligible for licensure. Graduates prior to this date may be accepted for the regular written and clinical examination after completing rotating internships in approved hospitals in the United States.
9. Enemy aliens not accepted.
10. Application must be filed six months prior to date of examination.
11. Licensed to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States.
12. Diplomates of National Board of Medical Examiners eligible.
13. License to practice medicine and surgery in the country in which the school of graduation is located.
14. Matriculants after Jan. 1, 1940 not accepted.
15. At the discretion of the board.
16. Internship and graduate work.
17. Internship completed in foreign countries after July 1, 1934 not acceptable.
18. Rotating internship in approved hospital in the United States or completion of senior year in class A medical school in the United States.
19. These requirements apply also to graduates of Canadian schools.
20. Graduates from foreign medical colleges accepted if they present also a diploma from an approved medical school in the United States.
21. Provided standard was the same as California on the same date.
22. Degree from an American medical college acceptable to the Medical Council of Delaware required.
23. Diplomates of the National Board of Medical Examiners accepted. Citizenship required.
24. Very limited number contracting to practice in rural districts may be accepted.
25. Effective July 1, 1943.
26. Homeopathic board requires one year internship in homeopathic hospital in the United States.
27. Will consider limited license for applicant with acceptable credits from National Board of Medical Examiners and states maintaining reciprocity.

bers registered as medical licentiates in the United States, Hawaii and Puerto Rico by written examination or endorsement of credentials in the past six years, 1940 to 1945 inclusive. Figures are given separately for those licensed by written examination and by endorsement of credentials. In the six years shown, seventeen states, Hawaii and Puerto Rico registered 1,008 by examination and 50 by endorsement of credentials. In 1945 there were 166 so registered, 156 by examination and 10 without written examination in nine states, namely California, Illinois, Massachusetts, Missouri, Nevada, New Hampshire, New Mexico, Virginia and Wisconsin.

The large numbers of unapproved graduates licensed in Illinois and Massachusetts result from the nature

TABLE 26—*Physicians Examined on the Basis of Credentials Obtained*

Marginal Number		1 Alabama		2 California		3 Colorado		4 Connecticut		5 Dist. of Columbia		6 Florida		7 Illinois		8 Indiana		9 Maine		10 Maryland		11 Massachusetts	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	BELGIUM																						
1	Université Libre de Bruxelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	Uñiversiteit Gent	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	Université de Liege	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	CHILE																						
4	Universidad de Chile	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	COLOMBIA																						
5	Nacional Universidad Bogota	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..
6	Universidad de Cartagena	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..
	CUBA																						
7	Universidad de la Habana	..	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	..	..	..	..	2	2
	CZECHOSLOVAKIA																						
8	Deutsche Universität, Prag	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	0	2
9	Universita Karlova, Praha	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	DENMARK																						
10	Københavns Universitet	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	DOMINICAN REPUBLIC																						
11	Universidad de Santo Domingo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..
	ECUADOR																						
12	Universidad de Guayaquil	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..
	EL SALVADOR																						
13	Universidad de El Salvador	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ENGLAND																						
14	University of Bristol	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	Licentiate of the Royal College of Physicians of London, Member of the Royal College of Surgeons of England	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ESTONIA																						
17	Université de Tartu	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1
	FRANCE																						
18	Université de Montpellier	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..
19	Université de Paris	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1
20	Université de Strasbourg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	GERMANY																						
21	Friedrich-Wilhelms Universität, Berlin	..	..	..	..	..	..	..	..	..	..	..	..	0	2	1	0	..	..	2	0	..	..
22	Rheinische Friedrich-Wilhelms Universität, Bonn	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..
23	Schlesische Friedrich-Wilhelms Universität, Breslau	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	..	..
24	Friedrich-Alexanders Universität, Erlangen	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	Albert-Ludwigs Universität, Freiburg	..	..	0	1	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..
26	Georg August Universität, Göttingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
27	Universität Heidelberg	..	..	1	0	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..
28	Christian-Albrechts Universität, Kiel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	Albertus Universität, Königsberg	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	0	1
30	Universität Leipzig	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	0	1	..	..
31	Ludwig-Maximilians Universität, München	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	Universität Rostock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..
33	Eberhard-Karls Universität, Tubingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
34	Julius-Maximilians Universität, Wurzburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	1	0
35	Hamburgische Universität	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	1	0	1	0
36	Universität Köln	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
37	Johann Wolfgang Goethe Universität, Frankfurt-am-Main	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
38	Universität Wien	1	0	6	1	1	0	2	3	..	..	..	..	1	0	..	..	..	..	2	1	0	3
39	Karl-Franzens Universität, Graz	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..
	GREECE																						
40	National University of Athens	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	0	2
	HAITI																						
41	Ecole National de Médecine, Port-au-Prince	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..
	HUNGARY																						
42	Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
43	Magyar Királyi Ferenez József Tudományegyetem, Szeged	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
44	Magyar Királyi Erzsébet Tudományegyetem, Pecs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45	Magyar Királyi Tisza-István Tudományegyetem, Debrecen	..	..	..	..	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..
	IRELAND																						
46	University of Dublin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	ITALY																						
47	Regia Università di Bologna	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	0	1	0	1
48	Regia Università di Genova	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
49	Regia Università di Napoli	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..
50	Regia Università di Padova	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..
51	Regia Università di Palermo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
52	Regia Università di Pavia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
53	Regia Università di Pisa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
54	Regia Università di Roma	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
55	Regia Università di Torino	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	LEBANON																						
56	American University of Beirut	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0
57	l'Université de St. Joseph, Beyrouth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	MEXICO																						
58	Universidad Nacional, México D. F.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
59	Universidad de Guadalajara	..	..	1	2	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..
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P—Passed; F—Failed.

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in Countries Other Than The United States and Canada, 1945

12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27						
Michigan		Mississippi		Missouri		Nebraska		New Hampshire		New Jersey		New York		Ohio		Pennsylvania		Rhode Island		South Dakota		Tennessee		Texas		Virginia		Washington		Puerto Rico		Totals	Examined—Passed	Examined—Failed	Percentage of Failures	Number of Boards Examined by	Marginal Number
P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	2	2	0	0.0	2	1
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	2
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	5
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	12	4	8	66.7	4	7
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	10	4	6	60.0	4	8
..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	4	66.7	2	9
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	10
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	11
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	12
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	13
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	14
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	15
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	16
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	17
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	18
..	..	..	..	..	..	..	..	..	..	..	..	8	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	9	11	55.0	3	19
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	20
..	..	..	..	..	..	0	1	0	1	..	..	11	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	14	17	54.8	6	21
..	..	..	..	0	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	4	57.1	4	22
..	..	..	..	..	..	..	..	..	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5	3	37.5	3	23
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	2	24
..	..	..	..	..	..	..	..	..	..	..	..	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	2	10	83.3	3	25
..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	26
..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5	3	37.5	4	27
..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	2	0	2	100.0	1	28
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	1	6	85.7	3	29
..	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	1	5	83.3	3	30
..	..	..	..	..	..	..	..	..	..	..	..	0	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	1	8	88.9	2	31
..	..	..	..	..	..	..	..	..	..	..	..	1	7	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	32
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	2	100.0	1	33
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	3	75.0	3	34
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	2	4	66.7	4	35
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	36
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	37
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..	75	37	38	50.7	14	38
1	0	1	0	..	..	..	..	1	0	..	..	19	28	..	..	0	2	..	..	1	0	1	0	..	..	..	..	..	..	..	..	2	1	1	50.0	2	39
..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	2	3	60.0	3	40
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	41
..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	2	40.0	2	42
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	2	0	2	100.0	2	43
..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	44
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	2	45
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	46
..	..	..	..	..	..	..	..	..	..	2	2	3	13	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	6	19	76.0	7	47
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	48
..	..	..	..	..	..	..	..	..	..	0	2	3	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	3	14	82.3	3	49
..	..	..	..	..	..	..	..	..	..	0	1	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	3	4	57.1	3	50
..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	3	100.0	1	51
..	..	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	2	100.0	1	52
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	53
..	..	..	..	..	..	..	..	..	..	1	1	3	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	6	6	50.0	4	54
..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	55
..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	0	0.0	2	56
..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	57
..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	3	3	0	0.0	2	58
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	3	75.0	2	59
12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27						

TABLE 26—*Physicians Examined on the Basis of Credentials Obtained*

Marginal Number		1 Alabama		2 California		3 Colorado		4 Connecticut		5 Dist. of Columbia		6 Florida		7 Illinois		8 Indiana		9 Maine		10 Maryland		11 Massachusetts	
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F
	POLAND																						
60	Uniwersytet Jana Kazimierza, Lwów	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
61	Uniwersytet Jozefa Pilsudskiégo, Warszawa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
62	Uniwersytet Stefana Batorego, Wilno	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	SCOTLAND																						
63	University of St. Andrews, St. Andrews and Dundee	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
64	Licentiate of the Royal College of Physicians and Surgeons, Edinburgh; Licentiate of the Royal Faculty of Physicians and Surgeons, Glasgow	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
	SPAIN																						
65	Universidad de Barcelona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
66	Universidad Central de España, Madrid	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
	SWITZERLAND																						
67	Universität Basel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
68	Universität Bern	..	..	1	1	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
69	Université de Geneve	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
70	Université de Lausanne	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
71	Universität Zürich	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
	TURKEY																						
72	University of Istanbul	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	UNION OF SOCIALIST SOVIET REPUBLICS																						
73	Voronezh Medical Institute	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
74	Kiev Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..
75	First Moscow Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
76	Severo-Kavka Medical Institute, Rostov-on-Don	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
77	Second Moscow Medical Institute	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	YUGOSLAVIA																						
78	Beogradskog Universiteta	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0
79	Totals	1		25		1		11		1		1		29		1		4		15		27	
80	Totals—Examined—Passed	1		17		1		6		1		1		10		1		1		8		12	
81	Totals—Examined—Failed	0		8		0		5		0		0		19		0		3		7		15	
82	Percentage Failed	0.0		32.0		0.0		45.5		0.0		0.0		65.6		0.0		75.0		46.7		55.6	
	Marginal Number	1		2		3		4		5		6		7		8		9		10		11	

P—Passed; F—Failed.

may practice either medicine, surgery, or both, as the case may be, if he passes a satisfactory examination before the medical examining board. In Delaware osteopaths are licensed as "osteopathic physicians." In the District of Columbia osteopaths are granted the right to practice surgery. In Indiana the licenses issued to osteopaths under a 1945 amendment to the medical practice act authorize the holders to practice medicine and surgery. Licentiates in osteopathy prior to 1945 have now been authorized to practice osteopathy, surgery and obstetrics. In Massachusetts the medical practice act, by definition, includes osteopathy in the practice of medicine and does not differentiate the type of license issed to an osteopathic applicant. According to a law passed in Nebraska in 1943 "any person now licensed to practice osteopathy may, if application is made prior to July 1, 1948 and upon payment of the prescribed fee, take the first regular examination given after the application is made before the Board of Examiners in Medicine. . . . If successful he or she shall receive a license to practice medicine and surgery in the state." In New Hampshire osteopaths are granted the right to practice medicine and surgery. New Jersey provides that osteopaths licensed prior to Nov. 1, 1941 who furnish proof, prior to that date, of having served for a period of two years as an intern or resident surgeon in an osteopathic or medical hospital approved by the board of medical examiners, of having completed a postgraduate course of two years in a college of osteopathy or medicine approved by the board or of having had at least three years of practice in a hospital approved by the board can be admitted to an examination in pharmacology, therapeutics and surgery and, if successful, can obtain a license to practice medicine and surgery. Since 1941 all osteopathic applicants who have met the requirements of the medical practice act have been licensed to practice medicine and surgery.

A law passed in Ohio in 1943 gives osteopaths who obtain their licenses under that act the right to practice osteopathic medicine and surgery. In Oregon they are granted the right to practice "in the subjects" covered by the examination, which includes surgery. The medical practice act of Texas provides for the issuing of a license to practice medicine only and osteopaths are issued licenses unrestricted in scope. In Virginia osteopaths may obtain the right to use drugs and perform surgery with the use of instruments if they satisfy the board of medical examiners that they are qualified to do so. Wisconsin grants osteopaths the privilege to practice surgery, and in Wyoming the statutes contain no specific provision for the licensing of osteopaths. The medical practice act of the latter state provides that the certificate issued to all applicants "shall be deemed licenses to practice medicine in all branches in which the applicant has taken examination in the state."

PHYSICIANS EXAMINED ON BASIS OF CREDENTIALS OBTAINED IN COUNTRIES OTHER THAN THE UNITED STATES AND CANADA

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. It does not attempt to evaluate institutions which it is not in a position to visit to determine whether they meet the minimal essentials of an acceptable medical school as outlined by the Council. This was true even before the war.

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in Countries Other Than The United States and Canada, 1945—Continued

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27						
Michigan	Mississippi	Missouri	Nebraska	New Hampshire	New Jersey	New York	Ohio	Pennsylvania	Rhode Island	South Dakota	Tennessee	Texas	Virginia	Washington	Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	Number of Boards Examined by	Marginal Number
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	2	60
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	1	1	50.0	1	61
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	0	2	100.0	1	62
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	63
.. ..	.. ..	.. ..	.. ..	.. ..	2 0	6 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	10	9	1	10.0	3	64
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	2	0	0.0	1	65
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	66
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8 8	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	17	8	9	52.9	2	67
.. ..	.. ..	.. ..	.. ..	1 0	.. ..	2 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	9	5	4	44.4	4	68
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4 6	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	13	7	6	46.2	4	69
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	15 9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	27	16	11	40.7	3	70
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	11	7	4	36.4	3	71
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	72
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	1	2	66.7	2	73
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	0	2	100.0	2	74
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	2	3	60.0	2	75
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	0	1	100.0	1	76
.. ..	.. ..	.. ..	.. ..	.. ..	0 1	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2	0	2	100.0	2	77
.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1	1	0	0.0	1	78
1	1	2	1	3	13	320	2	3	1	2	1	2	2	1	4	475	....	....	....	..	79
1	1	1	0	2	6	128	1	0	1	2	1	1	1	1	3	...	209	...	....	..	80
0	0	1	1	1	7	192	1	3	0	0	0	1	1	0	1	...	...	266	....	..	81
0.0	0.0	50.0	100.0	33.3	53.8	60.0	50.0	100.0	0.0	0.0	0.0	50.0	50.0	0.0	25.0	...	...	...	56.0	..	82
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27						

For a period of twelve years beginning in 1926 the credentials of physicians coming from abroad were verified by the Council through official correspondence with the medical schools directly or through the diplomatic services. Prior to the onset of the war in Europe it was necessary to discontinue this effort, and on the licensing boards rests the responsibility of evaluating the credentials presented by these graduates. In the 1942 edition of the American Medical Directory a symbol in the biographic data of foreign graduates indicates when the information given is the licensing board's record of the credential accepted as meeting the educational qualifications for licensure. The absence of the symbol may be interpreted to indicate that official verification is on file in the office of the Council.

The requirements of candidates for medical licensure in the United States, Alaska, Hawaii and Puerto Rico on the basis of credentials obtained in countries other than the United States and Canada are given in table 25. Eighteen states report that the holders of such credentials are not eligible for licensure. Eighteen states, Alaska, Hawaii and Puerto Rico require full citizenship and ten naturalization papers as a condition precedent to taking the examination. California, Indiana and the District of Columbia make no reference to citizenship. In some states the recognition or nonrecognition of such individuals is by rule of the board, in others the provision is by statute. Ten states that will admit foreign graduates to practice require a certificate from the state board of examiners in the basic sciences. In nineteen states, Alaska, Hawaii and Puerto Rico an internship in a hospital in the United States is a prerequisite. Additional qualifications of individual states are given in footnotes. No state has changed its laws regarding these graduates or relaxed its requirements in recent years.

Table 26 presents figures relating to physicians examined on the basis of credentials obtained in countries other than the United States and Canada by licensing boards in 1945. The figures represent both American and foreign born physicians educated abroad. Seventy-five faculties of medicine and three licensing corporations of eighteen European countries and nine other countries are represented. There were 475 physicians examined by twenty-five states, the District of Columbia and Puerto Rico, of whom 209 passed and 266,

TABLE 27.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1945*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
1943	1,031	518	49.8
1944	691	325	53.0
1945	475	209	56.0
Totals	13,424	7,043	47.5

56.0 per cent, failed. Graduates of the University of Vienna represented the largest group, 75, who were examined in fourteen states, with a failure percentage of 50.7. Six states examined 31 graduates of the University of Berlin, of whom 54.8 per cent failed. Twenty or more graduates of the Universities of Paris, Bologna and Lausanne also were examined in the United States last year. Fewer than 5 graduates of fifty-one foreign schools appeared for licensure last year.

The greatest number of foreign graduates examined by any one state was 320 in New York, of whom 128 passed and 192 (60.0 per cent) failed. No other state tested more than 29 of these physicians. Fewer than 5 were examined by nineteen states and Puerto Rico.

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California	Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.
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Florida	Dr. Harold D. Van Schaick, 2736 S.W. 7th Ave., Miami 36.
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Michigan	Dr. J. E. McIntyre, 100 W. Allegan St., Lansing 8.
Minnesota	Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.
Mississippi	Dr. R.N. Whitfield, Jackson 113.
Missouri	Dr. R. M. James, State Capitol Bldg., Jefferson City.
Montana	Dr. O. G. Klein, First National Bank Bldg., Helena.
Nebraska	Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln 9.
Nevada	Dr. G. H. Ross, 215 N. Carson St., Carson City.
New Hampshire	Dr. John S. Wheeler, 107 State House, Concord.
New Jersey	Dr. E. S. Hallinger, 28 W. State St., Trenton.
New Mexico	Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.
New York	Dr. J. L. Lochner, Education Bldg., Albany.
North Carolina	Dr. Ivan Proeter, 226 Hillsboro St., Raleigh.
North Dakota	Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.
Ohio	Dr. H. M. Platter, 21 W. Broad St., Columbus.
Oklahoma	Dr. J. D. Osborn Jr., Frederick.
Oregon	Miss L. M. Conlee, 608 Failing Bldg., Portland 4.
Pennsylvania	Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.
Rhode Island	Mr. Thomas B. Casey, 366 State Office Bldg., Providence.
South Carolina	Dr. N. B. Heyward, 1329 Blanding St., Columbia.
South Dakota	Dr. Gilbert Cottam, Capitol Bldg., Pierre.
Tennessee	Dr. H. W. Qualls, 130 Madison Ave., Memphis 3.
Texas	Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.
Utah	Mr. W. R. McEntire, 324 State Capitol Bldg., Salt Lake City 1.
Vermont	Dr. F. J. Lawliss, Richford.
Virginia	Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.
Washington	Mr. Harry C. Huse, Olympia.
West Virginia	Dr. John E. Offner, State Capitol, Charleston 5.
Wisconsin	Dr. C. A. Dawson, Tremont Bldg., River Falls.
Wyoming	Dr. G. M. Anderson, Capitol Bldg., Cheyenne.
Alaska	Dr. W. M. Whitehead, Box 140, Juneau.
Canal Zone	Dr. M. C. Stayer, Balboa Heights.
Hawaii	Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu.
Puerto Rico	Dr. O. C. Mandy, Box 3854, Santurce.
Virgin Islands	Dr. K. Knud-Hansen, Charlotte Amalie.

Table 27 records the number of graduates of faculties of medicine abroad examined for medical licensure in the United States in the sixteen years 1930 to 1945 inclusive. In this period 13,424 were examined, of whom 7,043 passed and 47.5 per cent failed. There has been a decrease of 216 in the number examined in 1945 as compared with the previous year. Although there has been a considerable reduction in the number of foreign graduates seeking licensure in recent years the percentage of failures has not changed significantly. The greatest number of failures occurred in 1941, when 59.2 per cent failed. At no time in this sixteen year period did fewer than 30.7 per cent fail.

From 1936 to 1940 there were large annual increases in foreign graduates examined, so that in 1940 there were over three times as many tested as in 1936. Since 1940 there have been annual decreases. The number examined last year was 1,613 fewer than that of 1940, but the annual total has not yet reached the average number of foreign graduates examined prior to 1935 and before the increased migration of foreign physicians to this country from Europe.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Seventeen states and the District of Columbia have adopted by legislative action basic science requirements underlying the practice of the healing art. A basic science law provides for the establishment of a board of examiners and requires that each person who desires to practice the healing arts appear before that board and demonstrate his knowledge. Such boards are distinct from licensing boards. A certificate of proficiency in the basic sciences does not authorize the possessor to practice the healing art; it enables him only to apply for licensure so to practice. Some states provide for reciprocal agreements.

TABLE 28.—*States Having Basic Science Laws and Year of Enactment*

Arizona	1936	Nebraska	1927
Arkansas	1929	New Mexico	1941
Colorado	1937	Oklahoma	1937
Connecticut	1925	Oregon	1933
District of Columbia	1929	Rhode Island	1940
Florida	1939	South Dakota	1939
Iowa	1935	Tennessee	1943
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925

Connecticut and Wisconsin were the first states to adopt such legislation. Laws were passed in these states in 1925. Other states comprising the group, together with the year of enactment of their basic science law, are recorded in table 28.

The subjects in which examinations are conducted by the respective states and the District of Columbia are shown in table 29. These subjects are specified by statute. The examining boards are not authorized to add any subjects or to fail to examine in any subject specified by the law. All eighteen boards examine in anatomy, pathology and physiology, sixteen examine in chemistry, fourteen in bacteriology, eight in hygiene, two in diagnosis and one in public health.

The results of examinations held in these states and the number of certificates issued on the basis of reciprocity or endorsement during 1945 are presented in tables 30 and 31 as reported by the respective boards. A candidate in applying for a basic science certificate

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is not required to mention his school of practice. However, by checking the biographic records of physicians and medical student records of the American Medical Association and various directories it has been possible to determine the profession of the majority of candidates. Thus it has been possible to tabulate the figures in four groups, namely physicians and medical students, osteopaths, chiropractors and unclassified applicants. The latter category includes those for whom it was not possible to determine the profession represented. In Rhode Island doctors of dentistry represent the unclassified group. It may be assumed that others in this unclassified group include osteopaths, chiropractors and also naturopaths who have not been identified by the reference material available.

A total of 2,979 candidates (table 30) were examined by the eighteen boards in operation in 1945. Of this number 2,559 were physicians or medical students, 183 were osteopaths, 33 were chiropractors and 181 were placed in the unclassified group. Of all applicants 21.7 per cent failed. Of the physicians and medical students examined 16.4 per cent failed, osteopaths 43.7 per cent, chiropractors 75.8 per cent and unclassified 54.7 per cent. If a candidate failed more than once in a given year in a state he is regarded as a single

TABLE 29.—*Subjects Included in Basic Science Examinations*

	Examinations Required in							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Public Health
Arizona	+	+	+	..	+	+	+	..
Arkansas	+	+	+	..	..	+	+	..
Colorado	+	+	+	..	..	+	+	..
Connecticut	+	..	..	+	+	+	+	..
Dist. Columbia	+	+	+	..	..	+	+	..
Florida	+	+	+	..	..	+	+	..
Iowa	+	+	+	..	+	+	+	..
Michigan	+	+	+	..	+	+	+	+
Minnesota	+	+	+	..	+	+	+	..
Nebraska	+	+	+	..	+	+	+	..
New Mexico	+	+	+	..	..	+	+	..
Oklahoma	+	+	+	..	..	+	+	..
Oregon	+	..	+	..	+	+	+	..
Rhode Island	+	+	+	..	..	+	+	..
South Dakota	+	+	+	..	..	+	+	..
Tennessee	+	+	+	..	..	+	+	..
Washington	+	..	+	..	+	+	+	..
Wisconsin	+	..	..	+	..	+	+	..

failure. Among those who passed there were 2,139 physicians and medical students, 103 osteopaths, 8 chiropractors and 82 unclassified candidates. The basic science boards of Florida and Michigan examined the greatest number of applicants. In each of these two states 398 were tested. In Florida this group represented 363 physicians and medical students and 35 others, while in Michigan there were 381 physicians or medical students and 17 others. Of those examined in Florida 25.9 per cent failed and in Michigan 28.9 per cent. Iowa, Minnesota and Wisconsin also examined more than 300 candidates. The percentage of failures in these states was 47.9, 13.1 and 9.2 respectively. Three states reported no failures.

Osteopaths were tested in all states except Arkansas, District of Columbia, Nebraska, Rhode Island, Tennessee and Wisconsin. Chiropractors appeared for examination in Connecticut, Florida, Iowa, New Mexico, Rhode Island, Tennessee, Washington and Wisconsin.

It is the policy of the Arizona Board of Examiners in the Basic Sciences to omit the names of applicants who fail examinations. Failures for this state are recorded only in the total column.

Thirteen states issued 584 certificates by reciprocity, endorsement or waiver, and the boards of all states granted 2,315 certificates after examination. Altogether, 2,899 certificates of proficiency were issued. The number of successful applicants by both of these methods are recorded in table 31. Among the successful candidates were 2,534 physicians, 263 osteopaths,

TABLE 30.—*Applicants Examined in Basic Sciences, 1945*

	Physicians and Medical Students		Osteopaths		Chiropractors		Unclassified		Totals Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Arizona	42	0	2	0	0	0	0	0	67	44	23*	34.3
Arkansas	115	0	0	0	0	0	0	0	115	115	0	0.0
Colorado	160	22	2	0	0	0	2	3	189	164	25	13.2
Connecticut	73	4	2	1	0	3	1	1	85	76	9	10.6
District of Columbia	18	4	0	0	0	0	0	0	22	18	4	18.2
Florida	272	91	13	4	6	3	4	5	398	295	103	25.9
Iowa	89	31	34	40	0	5	42	76	317	165	152	47.9
Michigan	278	103	2	9	0	0	3	3	398	283	115	28.9
Minnesota	233	24	30	16	0	0	1	0	304	264	40	13.1
Nebraska	105	18	0	0	0	0	1	0	124	106	18	14.5
New Mexico	6	1	1	0	0	2	0	0	10	7	3	30.0
Oklahoma	71	0	1	0	0	0	0	0	72	72	0	0.0
Oregon	102	37	2	1	0	0	0	1	143	104	39	27.3
Rhode Island	43	4	0	0	0	1	24	2	74	67	7	9.5
South Dakota	26	0	2	0	0	0	1	0	29	29	0	0.0
Tennessee	126	45	0	0	1	1	0	1	174	127	47	27.0
Washington	89	21	12	9	0	1	0	1	133	101	32	24.1
Wisconsin	291	15	0	0	1	9	3	6	325	295	30	9.2
Totals Examined	2,559		183		33		181		2,979			
Totals—Passed	2,139		103		8		82		.....	2,832		
Totals—Failed	420		80		25		99		.....	.....	647	
Percentage Failed	16.4		43.7		75.8		54.7		.....	.....	...	21.7

* Nature of practice undeterminable, since names of failures not supplied.

19 chiropractors and 83 others. New Mexico certified the most applicants without examination, numbering 111, of whom 43 were physicians, 61 osteopaths and 7 chiropractors. Florida and Washington have no

TABLE 31.—*Basic Science Certificates Issued by Examination, Reciprocity and Endorsement, 1945*

	Examination					Reciprocity, Endorsement or Waiver					
	Physicians and Medical Students	Osteopaths	Chiropractors	Unclassified	Totals	Physicians and Medical Students	Osteopaths	Chiropractors	Unclassified	Totals	Registered
Arizona	50	2	0	0	52	19	17	0	0	36	88
Arkansas	115	0	0	0	115	12	0	0	0	12	127
Colorado	160	2	0	2	164	45	14	0	0	59	223
Connecticut	73	2	0	1	76	0	0	0	0	0	76
District of Columbia	18	0	0	0	18	0	0	0	0	0	18
Florida	272	13	6	4	295	0	0	0	0	0	295
Iowa	89	34	0	42	165	28	2	0	0	30	195
Michigan	278	2	0	3	283	8	29	0	0	37	320
Minnesota	233	30	0	1	264	84	0	3	0	87	351
Nebraska	103	0	0	1	106	10	0	0	0	10	116
New Mexico	6	1	0	0	7	43	61	7	0	111	118
Oklahoma	71	1	0	0	72	1	0	0	0	1	73
Oregon	102	2	0	0	104	21	21	0	0	42	146
Rhode Island	43	0	0	24	67	0	0	0	0	0	67
South Dakota	26	2	0	1	29	3	0	0	0	3	32
Tennessee	161	0	1	0	162	61	0	0	0	61	163
Washington	89	12	0	0	101	0	0	0	0	0	101
Wisconsin	291	0	1	3	295	77	16	1	1	95	390
Totals	2,122	103	8	82	2,315	412	160	11	1	584	2,899

reciprocal relations. None were certified without examination in Connecticut, District of Columbia, and Rhode Island.

The figures for certificates issued by examination in Arizona and Tennessee in table 31 do not agree with the examination figures of the preceding table. In Arizona 8 candidates were examined in 1944 and certi-

fied in 1945, while in Tennessee 25 were examined in 1945 and were not certified until 1946. The latter group will be included in next year's compilation of basic science tests.

Altogether, 2,899 candidates received basic science certificates in seventeen states and the District of Columbia, ranging from 18 in the District of Columbia to 390 in Wisconsin.

TABLE 32.—*Total Candidates for Basic Science Certification, 1927-1945*

		Physicians and Medical Students						Other Practitioners					
	No. of Boards	Examined	Passed	Failed	Percentage Failed	Endorsement	Totals Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Totals Certified
1927	5	305	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	5	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	691	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,032	891	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	158	70	88	55.7	26	96
1939	14	1,141	1,013	128	11.2	727	1,740	218	97	121	55.5	294	391
1940	16	1,303	1,140	163	12.5	324	1,464	280	153	127	43.9	22	175
1941	17	1,768	1,560	208	11.8	280	1,840	356	191	165	46.3	73	264
1942	17	1,725	1,476	249	14.4	213	1,689	497	249	248	49.9	91	340
1943	18	2,330	2,098	232	10.0	296	2,394	389	211	178	45.8	86	297
1944	18	2,284	1,868	416	18.2	222	2,012	465	276	189	40.6	87	363
1945	18	2,559	2,139	420	16.4	412	2,534	397	193	204	51.4	172	365
Totals		22,489	19,542	2,968	13.1	4,016	22,453	3,534	1,795	1,739	49.2	916	2,711

In table 32 is included the number of candidates examined and certified by basic science boards for each year since and including 1927. In 1928, when five boards were functioning, there were 646 physicians examined, of whom 9.3 per cent failed and 59 other practitioners, of whom 47.5 per cent failed. By comparison, in 1945 the eighteen boards in operation examined 2,559 physicians, of whom 16.4 per cent failed and 397 other practitioners, with 51.4 per cent failures.

In the nineteen year period 22,480 physicians and medical students were examined, of whom 19,542 were successful in these examinations. In the same period 3,534 other practitioners took the test and 1,795 were successful. Of the physicians or medical students examined during these years, 13.1 per cent failed and 49.2 per cent of the other practitioners were unsuccessful. There were in this same period 4,016 physicians and 916 others certified without examination.

In nineteen years 26,164 certificates have been granted by basic science boards. These certificates were awarded to 23,453 physicians and medical students and 2,711 other practitioners.

No new basic science legislation was enacted in 1945.

There was created a basic science examining board in Virginia in 1944 to consist of three members appointed by the governor from the faculties of the accredited colleges and universities of the state. None of the members may be a practitioner of any branch of the healing art. The board will cease to function July 1, 1949. It was created solely to examine a group of naturopaths and chiropractors who were practicing in the state without benefit of license during the twelve month period prior to July 1, 1944. Such practitioners must within the five year period either pass an examination given by this board in anatomy, bacteriology, elementary chemistry, pathology and physiology or must pass the examination given by the state board of medical examiners. The basic science board has no function whatever in connection with any other applicant for a license.

The basic science acts in two states were amended in 1945. In Arizona the act was amended to provide that an applicant who is a citizen of the United States who furnishes proof of a certification, registration or license issued to him "within any state or territory of the United States in which the requirements for the registration of said applicant at the date of issuance of his license shall be deemed by the board to be equivalent to those of Arizona shall be eligible for registration by reciprocal endorsement at the discretion of the board." In Tennessee the amendment now in effect imposes a basic science requirement on osteopaths, chiropractors and naturopaths in addition to physicians.

The principle of basic science legislation is to provide a means of insuring that all who seek licensure to care for sick and injured persons shall first possess a reasonable knowledge of the sciences fundamental to the healing art. The enforcement of such laws affects mostly the group classified as "other practitioners." This is particularly significant when one takes into account that the testing of individuals for basic science registration is made by nonmedical examiners. The results demonstrate that, in general, practitioners other than regular physicians are poorly equipped in the fundamentals of medicine and should not be entrusted to care for the health of the people.

Efforts are being made by the American Association of Basic Science Boards to provide information based on experience to states contemplating new basic science board legislation and to develop procedures to facilitate reciprocity arrangements. In some instances basic science certification by reciprocity is unnecessarily difficult because of otherwise unimportant differences in the laws of the various states. At the February 1946 meeting of the Federation of State Medical Boards a resolution was adopted authorizing the President to appoint a committee of three to meet with a similar committee representing the state basic science boards in an effort to integrate better the operation of basic science laws with the system of medical licensure now existing in the various states.

OFFICIALS OF BASIC SCIENCE BOARDS

Arizona.....Dr. R. L. Nugent, Science Hall, University of Arizona, Tucson.
Arkansas.....Mr. L. E. Gebauer, 701 Main Street, Little Rock.
Colorado.....Dr. Esther B. Starks, 1459 Ogden Street, Denver.
Connecticut.....Dr. C. M. Bakewell, 250 Church Street, New Haven.
District of Columbia..Dr. G. C. Ruhland, 6150 E. Municipal Building, Washington.
Florida.....Dr. J. F. Conn, John B. Stetson University, Deland.
Iowa.....Mr. H. W. Grefe, Capitol Building, Des Moines 19.
Michigan.....Miss Eloise LeBeau, 101 N. Walnut Street, Lansing.
Minnesota.....Dr. Raymond N. Bieter, 126 Millard Hall, University of Minnesota, Minneapolis 14.
Nebraska.....Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.
New Mexico.....Miss Marion M. Rhea, State Capitol, Santa Fe.
Oklahoma.....Dr. J. D. Osborn Jr., Frederick.
Oregon.....Mr. C. D. Byrne, University of Oregon, Eugene.
Rhode Island.....Mr. Thomas B. Casey, 366 State Office Building, Providence.
South Dakota.....Dr. G. M. Evans, Yankton.
Tennessee.....Dr. O. W. Hyman, 874 Union Avenue, Memphis.
Washington.....Mr. Harry C. Huse, Olympia.
Wisconsin.....Professor R. N. Bauer, 152 W. Wisconsin Avenue, Milwaukee 3.

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NATIONAL BOARD OF MEDICAL EXAMINERS

The licensing authorities of forty-four states, the District of Columbia and the territories and possessions of Alaska, Hawaii, Puerto Rico and the Canal Zone accept the certificate of the National Board of Medical Examiners as an adequate qualification for a medical license. The National Board certificate is not recognized by the licensing boards of Florida, Indiana, Montana and Wisconsin. At present Louisiana exempts diplomates of the National Board from the state examination if they have been licensed in some other state with which Louisiana reciprocates. Additional examinations are required of those who hold the certificate of the National Board by some of the states recognizing the certificate. These are oral examinations in Illinois, Maine, Rhode Island and Wyoming, and a brief supplemental examination in Michigan. States, territories and possessions endorsing the certificate of the National Board are listed in table 33.

The examinations of the National Board in the basic sciences are accepted in lieu of the examinations in those subjects required by the basic science boards of Connecticut, Iowa, Minnesota, Nebraska, New Mexico, Oklahoma, Tennessee and the District of Columbia.

Diplomates of the National Board are admitted to the final examination of the Examining Board in England, of the Triple Qualification Board of Scotland and of the Conjoint Board in Ireland. These final examinations are both written and oral and correspond to parts II and III of the National Board. The National Board admits directly to parts II and III the diplomates of these boards of Great Britain and Ireland, provided they hold a degree in medicine from an acceptable university. The certificate of the National Board has in the past been recognized in Lebanon, Spain, Turkey and other foreign countries. It is also recognized under certain conditions by the South African Medical Council. Diplomates are also admitted without further examination to the Mayo Foundation (Graduate School of the University of Minnesota) and are exempt from some of the qualifications required by the United States Public Health Service.

TABLE 33.—*States Endorsing Certificates of the National Board of Medical Examiners*

Alabama	Illinois	Nebraska	Puerto Rico
Alaska	Iowa	Nevada	Rhode Island
Arizona	Kansas	New Hampshire	South Carolina
Arkansas	Kentucky	New Jersey	South Dakota
California	Louisiana	New Mexico	Tennessee
Canal Zone	Maine	New York	Texas
Colorado	Maryland	North Carolina	Utah
Connecticut	Massachusetts	North Dakota	Vermont
Delaware	Michigan	Ohio	Virginia
Dist. of Columbia	Minnesota	Oklahoma	Washington
Georgia	Mississippi	Oregon	West Virginia
Hawaii	Missouri	Pennsylvania	Wyoming
Idaho			

TABLE 34.—*National Board Examinations, 1916-1921*

Date		Total Examined	Failed	Percentage Failed
October	1916	10	5	50.0
June	1917	12	3	25.0
October	1917	28	6	21.4
January	1918	20	2	10.0
April	1918	23	5	21.7
December	1918	16	1	6.3
June	1919	52	1	1.9
February	1920	48	12	25.0
May	1920	60	14	23.3
February	1921	16	5	31.3
June	1921	40	3	7.5
Totals		325	57	17.5

Requirements for admission to the National Board examinations include a standard four year high school course, two years of acceptable college work including English, physics, chemistry, biology and a foreign language, and a medical education satisfactorily completed in an approved school in this country or Canada. Graduates of the university medical schools of Great Britain and Ireland are admitted to the examination provided these graduates have been licensed to practice in the country in which the school attended is located.

TABLE 35.—*National Board Examinations in Part I in 1945 and in the Years 1922-1945*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	723	444	230	49	9.9
May	841	405	398	38	8.6
July	1,502	745	641	116	13.6
November	799	512	266	81	13.7
Totals	3,865	2,106	1,475	284	11.8
1922	388	263	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,654	986	508	160	14.0
1939	1,733	1,048	469	225	17.7
1940	1,653	1,069	375	209	16.4
1941	1,640	1,087	346	207	16.0
1942	1,867	1,204	471	192	13.8
1943	2,656	1,441	962	253	14.9
1944	4,227	2,324	1,465	438	15.9
1945	3,865	2,106	1,475	284	11.8
Totals	35,017	21,296	10,133	3,588	14.4

The almost universal recognition of the examinations of the National Board is evidenced by the acceptance of the board's examinations by many medical schools as part of their own examination and promotion procedure. At some of the schools the students are required to pass part I at the end of the second year and part II at the end of the fourth year. Other schools require that part II be passed at the end of the fourth year. Candidates who fail to pass the National Board examinations are given a supplemental examination at most schools. The schools that require practically all of their students to take the National Board's examinations under one plan or another are Albany, Boston, Buffalo, Duke, George Washington, Harvard, Long Island, New York Medical College, Tufts and Yale. In addition to the schools named there are a few others at which those students who voluntarily take and pass the National Board's examinations, either in part I or in part II, are excused from the corresponding final school examinations. This group of schools includes Colorado, Georgetown, Illinois, Loyola, Minnesota, Pennsylvania and the Woman's Medical College.

In the following paragraphs data are presented for the twenty-eighth consecutive year regarding the examinations conducted and the issuance of certificates by the National Board of Medical Examiners. These data are based on official reports received periodically from the executive office of the board. The awarding of certificates to candidates forms a part of their biographic records maintained by the American Medical Association.

The first examination was given by the National Board in October 1916. From then until the test held in June 1921, eleven examinations were held and 268 candidates were certified. The results of each examination during this period are given in table 34.

TABLE 36.—*National Board Examinations in Part II in 1945 and in the Years 1922-1945*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
May	1,296	1,276	0	20	1.5
July	150	149	0	1	0.7
November	152	139	0	13	8.6
Totals	1,598	1,564	0	34	2.1
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	884	0	54	5.8
1940	1,028	963	9	56	5.5
1941	1,001	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
1943	1,869	1,804	0	56	3.0
1944	1,405	1,350	0	55	3.9
1945	1,598	1,564	0	34	2.1
Totals	18,020	16,799	46	1,175	6.5

Since 1922 the examination of the National Board has been divided into three separate parts which must be taken and completed in the following sequence: part I, consisting of a written examination in the basic sciences, part II, a written examination in five major clinical subjects, and part III, a clinical and practical examination in six major clinical divisions and their component subjects or subdivisions.

TABLE 37.—*National Board Examinations in Part III, 1922-1945*

	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
1939	770	729	41	5.3
1940	791	770	21	2.7
1941	910	885	25	2.7
1942	1,054	1,041	13	1.2
1943	1,230	1,213	17	1.4
1944	1,167	1,145	22	1.9
1945	1,231	1,218	13	1.1
Totals	13,899	13,443	456	3.3

The tables that are presented herewith enumerate the results of examinations in parts I, II and III for each calendar year since 1922, including those who passed and failed examinations and those certified.

During 1945 four examinations were given in part I and three in part II in various approved medical schools. Examinations in part III are given under the direction of local subsidiary boards at times sufficiently frequent to accommodate all eligible candidates. Boards have been organized for this purpose in twenty-four centers throughout the United States. Such examinations were held in 1945 during the months of January, June and July and in October.

A candidate is eligible for part I who has completed successfully the first two years of the medical course. An incomplete examination is allowed candidates at the end of their second medical year in schools whose third year curriculums include courses in one or two subjects of this part. These subjects may be taken at any examination period after the candidate has completed them in his medical school. They are recorded in these statistics under the heading "Incomplete Examinations."

A candidate is eligible for part II after completing a four year medical course and passing part I.

The figures in tables 35, 36 and 37 cover details of each examination given during 1945 and include some who fail and are reexamined during the same year and those who pass parts I and II in the same year. They

TABLE 38.—*Parts I, II and III, Excluding Duplications, 1922-1945*

	Total Examined	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,992	2,308	493	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,507	363	228	8.1
1941	3,318	2,749	332	237	7.9
1942	3,607	3,014	391	202	6.3
1943	4,513	3,670	606	237	6.1
1944	5,363	4,235	759	369	8.0
1945	5,614	4,468	886	260	5.5
Totals	59,585	47,028	8,171	4,396	8.6

represent, therefore, examinations conducted and not individuals examined.

Since 1922 there have been 35,017 examinations given in part I and 18,020 in part II. During this twenty-four year period 21,296 were successful tests in part I and 16,799 in part II. The percentage of failures was 14.4 in part I and 6.5 in part II. The wartime accelerated program in operation in all medical schools is evidenced by the increase in the number of candidates taking the examination since 1942. The greatest number of examinations in part I were given in 1944 and in 1945 there were 362 fewer than in the preceding year. Those given in part II in 1945 were 193 in excess of the previous year.

During the year 1944, 3,865 examinations were given in part I; 2,106 were passed and 284, or 11.8 per cent, failed. During the year 1,475 incomplete examinations were given. In part II, 1,598 examinations were held. Thirty-four of this number, 2.1 per cent, were failures. Incomplete examinations are only rarely given in part II. There were none last year.

Part III, the final examination of the National Board, is given when the candidate has received the M.D. degree and has satisfactorily completed an internship

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in a hospital approved by the Council on Medical Education and Hospitals or by the Canadian Medical Association or has served in a laboratory acceptable to the National Board. During the war period candidates were permitted to take part III after nine months of internship, but their certificates were withheld until three additional months had been served as a hospital intern or resident or on active duty in the medical department of the armed forces. In 1945, 1,231 tests were given in part III, 13 of which (1.1 per cent) were unsuccessful. Results of examinations in this part during twenty-four years are given in table 37 and indicate that 13,899 were tested, of whom 13,443 were granted certificates. The percentage of failures in twenty-four years was 3.3. Since the inception of the National Board in 1916, 13,711 certificates have been awarded.

Physicians who earn the certificate are designated Diplomates of the National Board and are privileged to use the designating initials D.N.B.

The tabulations thus far presented represent examinations given. The number of individuals tested during any one year is recorded for the twenty-four year period in table 38. The classification as "passed" or "failed" in cases in which more than one examination has been taken in a given year was based on the results of the last examination during the year in question. For example, if in 1945 a candidate passed part I but later in 1945 failed part II he is computed in the tabulation as having failed. By this computation figures indicate that there were 5,614 who took at least one of the tests of the National Board in 1945, as compared with 525 in 1922. The trend has been steadily upward, especially since 1942. Last year the number of candidates was 251 greater than in the previous year which exceeded the 1943 figure by 850. A total of 59,585 were examined in one or more of the annual examinations in the twenty-four years shown, of whom 47,028 passed, 8,171 took incomplete examinations and 4,396, or 8.6 per cent, failed.

TABLE 39.—*Diplomates from Individual Medical Schools, 1945*

University of Arkansas	2	New York Medical College	85
College of Medical Evangelists	30	New York University	83
Stanford University	2	Syracuse University	17
University of So. California	2	University of Buffalo	69
University of Colorado	1	University of Rochester	39
Yale University	49	Duke University	71
George Washington University	52	Ohio State University	1
Georgetown University	28	University of Cincinnati	4
Howard University	3	Western Reserve University	1
Loyola University	3	University of Oklahoma	1
Northwestern University	9	University of Oregon	3
University of Chicago	3	Hahnemann Medical College	6
University of Illinois	4	Jefferson Medical College	10
Indiana University	3	Temple University	3
State University of Iowa	11	University of Pennsylvania	27
University of Louisville	10	Woman's Medical College	10
Johns Hopkins University	6	Meharry Medical College	7
University of Maryland	2	University of Tennessee	3
Boston University	48	Vanderbilt University	3
Harvard Medical School	109	University of Vermont	8
Tufts College Medical School	99	Medical College of Virginia	2
University of Michigan	8	University of Virginia	1
Wayne University	1	Marquette University	6
University of Minnesota	7	University of Wisconsin	1
St. Louis University	9	McGill University	6
Washington University	2	Queen's University	1
Creighton University	1	University of Toronto	1
University of Nebraska	2	Extinct Medical School	1
Albany Medical College	42	Foreign	3
Columbia University	87		
Cornell University	48	Total	1,218
Long Island College of Medicine	62		

The 1,218 physicians certified as diplomates of the National Board of Medical Examiners last year represented graduates (table 39) from fifty-six existing and one extinct medical school in the United States, three in Canada and 3 graduates of faculties of medicine abroad. The National Board reports that it awarded diplomas from February 1922 to March 31, 1944 to 100 or more candidates from each of forty-five medical schools. Harvard heads the list with 2,048 graduates.

In 1945, 1,103 diplomates were granted licenses to practice medicine on the basis of their National Board certificate in 39 states, the District of Columbia, Hawaii and Puerto Rico. The number so registered in each state is reported in table 40. Since the National Board was formed, 10,028 physicians have been licensed to practice medicine on the basis of their credentials from the board. In the same period 13,443 received the certificate of the board. It would appear that 3,415 have not used the credential as a licensing medium.

TABLE 40.—*Licenses Granted on the Basis of National Board Certificates, 1945*

Alabama	5	Nebraska	1
Arizona	3	New Hampshire	6
Arkansas	1	New Jersey	62
California	98	New Mexico	3
Colorado	8	New York	407
Connecticut	52	North Carolina	23
District of Columbia	47	Ohio	19
Georgia	2	Oklahoma	6
Idaho	2	Oregon	2
Illinois	20	Pennsylvania	30
Indiana	8	Rhode Island	18
Iowa	5	South Carolina	2
Kansas	3	Tennessee	4
Kentucky	4	Texas	1
Maine	8	Utah	5
Maryland	17	Vermont	27
Massachusetts	143	Virginia	3
Michigan	11	Washington	4
Minnesota	20	West Virginia	3
Mississippi	2	Hawaii	3
Missouri	7	Puerto Rico	7
Total			1,103

The constitution of the National Board of Medical Examiners provides for a membership of thirty representing the federal services, the Federation of State Medical Boards of the United States, the Association of American Medical Colleges, the Council on Medical Education and Hospitals of the American Medical Association and members elected at large. The president of the board is Major Gen. M. W. Ireland, M.D., the medical secretary J. S. Rodman, M.D., and the executive secretary and treasurer Mr. Everett S. Elwood. The address of the board is 225 South 15th Street, Philadelphia.

EXAMINING BOARDS IN THE MEDICAL SPECIALTIES

Examining and certifying boards have been established in fifteen specialties, and all of these boards have been in operation since 1940. In 1934 the Council on Medical Education and Hospitals of the American Medical Association formulated minimal standards governing specialty boards, and these fifteen boards are fully approved.

Two boards certify candidates in subspecialties. The American Board of Internal Medicine certifies in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology. Regular board certification is a prerequisite for certification in the subspecialty. This function of the boards in internal medicine and surgery is also approved by the Council.

The "Essentials of Approved Examining Boards in Medical Specialties," as prepared by the Council, outlines the type of organization and the responsibilities of such boards as well as the minimum qualifications deemed necessary for certification as a specialist. Such qualifications include graduation from an approved

medical school, completion of an internship in a hospital approved by the Council, and a period of specialized training in a selected specialty. Three years of special training and a further period of two years devoted to specialty study and/or practice are considered by the Council to be the minimal training required before specialty practice. Some boards require more than this amount of training and education. Each board publishes a booklet containing information regarding its organization, personnel, purposes and requirements for certification. A statement of these requirements for each board was given in detail in the Educational Number of THE JOURNAL in 1942.[4] Only a few minor changes have been made by some of the boards since these regulations were published in 1942.

The Advisory Board for Medical Specialties was organized in 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada. This board reports directly to the various boards and functions in close collaboration with the Council on Medical Education and Hospitals of the American Medical Association.

The majority of the boards grant some credit for military service. The policies adopted by the boards vary. One board grants an indefinite amount of credit, to be determined by an evaluation of the experience of individual applicants. Another grants full credit for work done in the surgical division of a regularly constituted army or navy hospital. Most boards limit the credit allowed to one year of training and/or one year of experience. The special provisions for military credit made by each board were published in the 1943 Educational Number of THE JOURNAL.[5]

The 9-9-9 wartime graduate program curtailed the number of physicians desiring specialty certification. The various boards are taking this into consideration and will probably allow credit for the actual time spent by the candidate in house officer training in approved hospitals for nine month periods.

The Council on Medical Education and Hospitals cooperates with the various specialty boards in the approval of residencies and fellowships acceptable for certification. The Council inspects and evaluates new residencies in most instances; it approves residency programs jointly with the specialty boards. This program has been established so that approved services may be equally acceptable to the Council and to the respective specialty boards.

An analysis of questionnaires returned by 21,029 medical officers pertaining to their future educational plans[6] indicates that over 12,000 medical officers will seek specialty certification after the war. The Council, working with specialty boards, hospitals, medical schools and the Committee on Postwar Medical Service, has made notable progress in meeting these educational needs of the future in the advanced training of specialists, particularly physician veterans.

Because of the large number of applications for approval of residency training programs submitted by hospitals developing these programs in response to the increased demand for training by returning medical officers, the Council on Medical Education and Hospitals of the American Medical Association has approved a plan for the temporary approval of residencies. This plan was developed in collaboration with the Advisory Board for Medical Specialties through its executive committee. A majority of the American boards has already indicated an approval of the proposal. The program is as follows:

1. The Council on Medical Education and Hospitals of the American Medical Association has temporarily delegated to its secretary the authority to grant temporary residency approval on behalf of the Council subject to concurrence by the appropriate American board as described in No. 2.

2. Each participating American board has appointed representatives (usually one individual for each board) to consider new residencies for temporary approval with authority to act on behalf of the board.

3. Temporary approval will be based on information from the hospital concerning the personnel, facilities and educational program of the hospital service involved without immediate inspection. Such approval will be granted only if the representatives of the Council and of the board are reasonably satisfied that the education program fulfils the standards of both bodies.

4. Subsequently, employing the usual procedures, an inspection of the hospital will be carried out by the Council's staff. On the basis of the inspection report the Council will consider the temporarily approved hospital for transfer to the regularly approved list in the usual manner. The inspection report and the recommendations of the Council will be submitted to the appropriate board, and the board will return its concurrence or disagreements with the Council. The result of this procedure would be either (*a*) transfer of the temporarily approved residency to a fully approved status or (*b*) withdrawal of the temporary approval.

5. In the event of withdrawal of temporary approval and failure to grant regular approval, credit toward board certification will be given to physicians for that part of their training received while the residency was on a temporary approval status. After such withdrawal of approval, residents seeking board certification will be given a reasonable time to obtain another acceptable residency without loss of time credit. This means that no resident would be penalized so far as board credit is concerned for time spent in a temporarily approved residency.

In seeking approval by the Council on Medical Education and Hospitals, those hospitals which organize new residencies should initially make no distinction between regular versus temporary approval. Applications should be transmitted to the Council in the regular manner. In the immediate future most applications will be considered at once for temporary approval. The Council's staff will proceed with regular inspections as rapidly as possible, so that tranfer of acceptable hospital residencies from the temporarily approved to the regular approved list will take place as rapidly as possible if the inspection report seems to warrant such transfer in the

TABLE 41.—*Specialty Board Credit for Preceptorship Training*

	Credit Awarded	Preceptors Limitations: Any Certified Board Member	Preceptors Limitations: Other Than Certified Board Member	Preceptors Limitations: List of Preceptors Maintained	Maximum Training Credit
Anesthesiology	Yes	No[1]	Yes (rarely)[1]	No	2 years
Dermatology and syphilology	Yes	No[1]	No	Yes	2 years
Internal medicine[2]	...	...	...	...	...
Neurologic surgery	Yes	No[1]	No	No	No limit set
Obstetrics and gynecology	Yes	Yes	Yes[1]	No	Average 6 mos.
Ophthalmology	Yes	No[1]	Yes[1]	No	No limit set
Orthopedic surgery	Yes	Yes	No	No	Entire 3 years
Otolaryngology	Yes	Yes	Yes[1]	No	5 years
Pathology	No	...	...	...	...
Pediatrics	No	...	...	...	...
Plastic surgery	Yes	Yes	No	No	Full credit
Psychiatry and neurology	No	...	...	...	...
Radiology	No	...	...	...	...
Surgery	Yes	Yes[3]	Yes[1]	No	5 years
Urology	Yes	No[1]	No	No	3 years

1. Facilities and teacher qualifications must be approved by board.
2. To be considered at May 1946 meeting.
3. Institution must be approved for graduate training.

4. J. A. M. A. **119**: 1345 (Aug. 15) 1942.
5. J. A. M. A. **122**: 1085 (Aug. 14) 1943.
6. J. A. M. A. **127**: 759 (March 31) 1945.

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opinion of the representatives of the Council and of the American board concerned.

As a substitute for special training, service with a qualified preceptor is recognized by some of the specialty boards. The policies of the boards toward the acceptance of such training are briefly outlined in table 41. The exact time credit varies and in all instances is decided on an individual basis, depending on the amount of clinical responsibility and activity. The individual facilities and teacher qualifications of the preceptor must be approved by the respective board. This type of training is not acceptable to four boards, and one board has the matter under consideration. Only five of the boards will give consideration to preceptor training carried out under a qualified specialist who is not himself certified by the appropriate board.

Table 42 gives the annual number of specialists certified by all boards for the past five years. The largest number (2,172) obtained certificates in the year ended March 1943. In the two succeeding years there were progressive decreases primarily because of the war. Of all those physicians now certified, 39 per cent received their specialty credentials in the past five years.

A list of the specialty boards and their officers and the number of certificates awarded prior to March 1, 1945 and the number certified until March 1, 1946 respectively appear in table 43. On March 1, 1945 there were 24,752 physicians certified by the fifteen boards, and in the following year 1,356 were certified. Up to March 1, 1946 a total of 26,108 certificates had been awarded. Included in these figures are 809 who had been certified in the subspecialties mentioned, namely allergy 81, cardiovascular disease 338, gastroenterology 171, proctology 72 and tuberculosis 147.

In the specialties of internal medicine and surgery, 3,906 and 2,620 respectively have received the certificate of these boards. However, the greatest number in any one specialty certified was in otolaryngology. In this specialty 3,886 have received the board's certificate since its organization in 1927. The oldest board in existence, ophthalmology (organized in 1917), has to date certified 2,490.

A key number has been assigned to each approved board, such as A.B. 1, and the biographic records of physicians published in the American Medical Directory includes by these means reference to those certified.

The Council on Medical Education and Hospitals and representatives of the various boards, and the Advisory Board for Medical Specialties, annually hold a joint session for the interchange of ideas and the discussion of problems of mutual interest. These meetings have proved to be worth while contributions to the improvement of medical education and medical practice in this country.

TABLE 42.—*Annual Specialty Board Certifications Since 1940*

Year (Ended March)	Number of Boards in Existence	Number Certified That Year	Accumulated Totals
1940	14	.....	15,853
1941	15	2,085	17,938
1942	15	1,756	19,694
1943	15	2,172	21,866
1944	15	1,578	23,444
1945	15	1,308	24,752
1946	15	1,356	26,108

TABLE 43.—*Approved Examining Boards in Medical Specialties*

Key No.	Name of Board	Year of Incorporation	Total Certificates Awarded to March 1, 1945	Total Certificates Awarded to March 1, 1946
A.B. 1.	American Board of Pediatrics..... Pres., Edward B. Shaw, 384 Post St., San Francisco Sec., Lee F. Hill, 3309 Forest Ave., Des Moines, Iowa	1933	2,318	2,420
A.B. 2.	American Board of Psychiatry and Neurology ..... Pres., Hans H. Reese, Wisconsin Psychiatric Institute, Madison Sec., Walter Freeman, 1028 Connecticut Ave. N.W., Washington 6, D. C.	1934	1,899	2,027
A.B. 3.	American Board of Orthopaedic Surgery ..... Pres., Guy A. Caldwell, 3503 Prytania St., New Orleans Sec., Col. F. M. McKeever, 1136 W. 6th St., Los Angeles 14.	1934	896	940
A.B. 4.	American Board of Dermatology and Syphilology..... Pres., Howard Fox, 140 E. 54th St., New York City Sec., George M. Lewis, 66 E. 66th St., New York City.	1932	710	753
A.B. 5.	American Board of Radiology..... Pres., J. W. Pierson, 1107 St. Paul St., Baltimore Sec., B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.	1934	2,095	2,198
A.B. 6.	American Board of Urology..... Vice Pres., Clarence G. Bandler, 440 Park Ave., New York City Sec., Gilbert J. Thomas, 1400 Willow St., Minneapolis	1935	1,018	1,050
A.B. 7.	American Board of Obstetrics and Gynecology ..... Pres., Walter T. Dannreuther, 380 Park Ave., New York City Sec., Paul Titus, 1015 Highland Bldg., Pittsburgh 6	1930	1,871	1,965
A.B. 8.	American Board of Internal Medicine Chairman, Reginald Fitz, 319 Longwood Ave., Boston Asst. Sec., William A. Werrell, 1 West Main St., Madison 3, Wis.	1936	3,541	3,906
A.B. 9.	American Board of Pathology..... Pres., A. H. Sanford, 102 Second Ave. S.W., Rochester, Minn. Sec., F. W. Hartman, Henry Ford Hospital, Detroit	1936	1,047	1,240
A.B. 10.	American Board of Ophthalmology Chairman, Edward C. Ellett, 130 Madison Ave., Memphis, Tenn. Sec., S. Judd Beach, 56 Ivie Rd., Cape Cottage, Me.	1917	2,437	2,490
A.B. 11	American Board of Otolaryngology Pres., Harris P. Mosher, 127 Front St., Marblehead, Mass. Sec., Dean M. Lierle, University Hospital, Iowa City	1924	3,848	3,886
A.B. 12	American Board of Surgery..... Chairman, Vernon C. David, 59 E. Madison St., Chicago Sec., J. Stewart Rodman, 225 S. 15th St., Philadelphia	1937	2,499	2,620
A.B. 13.	American Board of Anesthesiology Pres., Philip D. Woodbridge, Reading Hospital, Reading, Pa. Sec., Paul M. Wood, 745 Fifth Ave., New York City 22	1938	249	276
A.B. 14.	American Board of Plastic Surgery Chairman, George M. Dorrance, 2101 Spruce St., Philadelphia Sec., Gordon B. New, 102 Second Ave. S.W., Rochester, Minn.	1937	161	163
A.B. 15.	American Board of Neurological Surgery ..... Chairman, Howard C. Naffziger, 384 Post St., San Francisco Sec., Paul C. Bucy, 912 S. Wood St., Chicago 12	1940	163	174
	Totals.....		24,752	26,108
	Advisory Board for Medical Specialties Pres., Paul Titus, 1015 Highland Bldg., Pittsburgh 6 Sec., B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.			

Certification in the subspecialties: By the American Board of Internal Medicine: allergy 81, cardiovascular disease 338, gastroenterology 171, tuberculosis 147. By the American Board of Surgery: proctology 72. Total certified in the subspecialties, 809. These figures are included in the foregoing tabulation.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 11, 1946

MEDICAL LICENSURE, 1945

Each of the special issues of THE JOURNAL containing material prepared by the Council on Medical Education and Hospitals reflects the cooperation of many institutions and agencies with the Council throughout the year. The annual Hospital Number depends on the collaboration of more than six thousand hospitals. The Educational Number would be impossible without the help of every medical and basic science school in the United States and Canada. The medical licensure statistics for the calendar year 1945 appearing on pages 109 to 139 of this issue are based on reports transmitted to the Council throughout the year by every medical examining and licensing board in the United States, the District of Columbia and the territories and possessions of the United States, as well as all boards of examiners in the basic medical sciences, the National Board of Medical Examiners and each examining board in the medical specialties.

The candidates whose examination results are reported represented sixty-nine approved medical schools in the United States, nine approved medical schools of Canada, seventy-five faculties of medicine and three licensing corporations of other countries, six medical schools now extinct, five unapproved institutions, six colleges of osteopathy and one individual who had not completed the medical course.

During the year 1945 there were 9,153 licenses issued, 5,541 after examination and 3,612 by reciprocity and endorsement. Of those licensed 5,707 represented real additions to the profession in this country, since many previously held licenses elsewhere. The latter figure may be compared with the 3,815 physician deaths in 1945, indicating an increase of 1,892 in the net physician population.

Never in the past four decades have there been as many licenses issued by reciprocity and endorsement as in the past year. This is probably because unprecedented numbers of physicians are seeking new locations after the disrupting influence of the war.

Failures of candidates in various categories in examinations given by state licensing boards followed the familiar pattern. Only 2.5 per cent of graduates of existing approved medical schools failed. On the other hand 40.8 per cent of those from unapproved schools failed and 56.0 per cent of the graduates of schools outside the United States and Canada did not pass.

The upward trend in numbers of physicians certified by the American boards in the specialties has not yet become apparent but should become noticeable in a year or two as returning medical officers complete their educational programs. Assistance to these men in fulfilling their plans has been provided not only by greatly increasing the regular residency openings but also by the adoption of a plan of temporary approval of residencies as well, which plan is described in this issue. In addition, the policies of the specialty boards regarding the acceptance of preceptor training are given.

The Council and THE JOURNAL greatly appreciate the contributions of the many agencies which made this material available. Besides publication in THE JOURNAL, a reprint will be available. Reprints of certain separate tables are also made to assist the Council in replying to the thousands of requests for information on licensure and related subjects received annually.

THE USE OF RADIOACTIVE IODINE IN THYROTOXICOSIS

When the biologists and medical scientists learned from the physicists that various elements can be made temporarily radioactive by bombardment with streams of certain particles, investigators sought for radioactive forms of those elements of most particular interest to them. By means of radioactive isotopes the course of any element may be followed through the body; thus many old problems of metabolism have been restudied by physical, instead of chemical, means. New explorations have been undertaken to which only the physical method is applicable.

In therapeutics also isotopes may be used. Radioactive phosphorus has been used in the treatment of leukemia and polycythemia. Elsewhere in this issue appear two reports on the use of radioactive iodine in the treatment of thyrotoxicosis. Because of the specific avidity of the thyroid for iodine it is possible, by making iodine radioactive, to place radiation directly within the cells which it is desired to irradiate. Such application might be expected to be more effective than that of x-rays introduced from without.

The papers of Hertz and Roberts and of Chapman and Evans indicate that a new and effective method of causing permanent remission in hyperthyroidism has become available. Whether or not it will prove superior to all other forms of therapy for the malady in question cannot be foretold now. Much more data must be accumulated before it can be asserted that radioactive

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iodine gives the patient a better chance of permanent cure and freedom from untoward side effects than does subtotal thyroidectomy or prolonged treatment with an antithyroid drug. The possibility, however, that treatment with radioactive iodine may possess such superiority makes extended study desirable.

From the evidence thus far available it would appear that treatment with radioactive iodine can produce remissions in cases of thyrotoxicosis associated with hyperthyroidism. However, the use of any form of radiation may be accompanied by late untoward side effects. The late development of cancer as a result of irradiation, although perhaps unlikely, is certainly within the realm of possibility. Thus far exact evidence is not available as to the effects of excretion of radioactive material by the kidney on the cells of that vital organ. Until sufficient time has elapsed to permit the necessary studies of tissues of the body long after treatment with radioactive iodine has been given, no one can predict the exact place that it will occupy in the control of this disease.

ASCORBIC ACID IN TOMATO JUICE

Certain foods have attained a special position in the national dietary as vehicles for one or another nutritional essential. Thus milk and milk products represent the best source of calcium, liver is outstanding in providing vitamin D and eggs are a favored item where protein and vitamin A are concerned. In much the same way tomato juice has established itself not only as an appetizer but also because it is an excellent source of ascorbic acid, and for this reason its manufacture is an important phase of the food industry. From the nutritional point of view the dietitian, the pediatrician and the consuming public are interested in the quality of the product with respect to the content of vitamin C. Indeed, this interest has been recognized by the recent decision of the Council on Foods and Nutrition [1] in which a minimum standard of 20 mg. of ascorbic acid per hundred cubic centimeters of juice was recommended. That some such standard is desirable is indicated by the observations of Pressley and her associates [2] on the vitamin C content of seventy-nine samples of canned tomato juice; a varation of from 2.5 to 25.2 mg. was recorded in this study.

The factors which may influence the content of ascorbic acid in tomatoes have been examined. The small fruited varieties—the so-called grape or pear tomatoes—contain much more vitamin C than the large fruited commercial varieties; the former group may contain as much as 63 mg. per hundred grams of fruit whereas the latter averages closer to 25 mg.[3] In general, variety appears to be an unimportant factor in influencing the vitamin C content of commercial types of tomato. Hamner and his associates [4] found that the degree of ripeness, storage at temperatures of 65 to 90 F. for ten to fourteen days, fertilization of the ground or humidity play an insignificant part in causing a variation of ascorbic acid content of tomatoes. On the other hand, the Cornell investigators showed that the intensity of light to which the mature green fruit is exposed is a highly important factor in the production of a high content of vitamin C in tomatoes. Other studies [5] have demonstrated that losses of ascorbic acid in picking, transportation and processing at the cannery are of minor importance; the greatest cause for variation of vitamin C in the finished product is the variation in the tomatoes themselves from which the juice is prepared.

Other fruits are known which contain more ascorbic acid than do tomatoes; for instance, the West Indian cherry has 1,700 milligrams per hundred grams of edible portion.[6] However, the extent to which the tomato enters into the American dietary emphasizes the value of the foregoing data. It also illustrates the possibility for better national nutrition when the agricultural chemist, the geneticist, the agronomist and the food processor cooperate in producing superior foods.

1. Council on Foods and Nutrition: Acceptability of Foods with High Natural Vitamin C Content, J. A. M. A. **128:** 205 (May 19) 1945.
2. Pressley, Anne; Ridder, Clara; Smith, M. C., and Caldwell, Emily: J. Nutrition **28:** 107 (Aug.) 1944.
3. Reynard, G. B., and Kanapanx, M. S.: Proc. Am. Soc. Hort. Sc. **41:** 298, 1942.

JAUNDICE FOLLOWING YELLOW FEVER VACCINATION

The epidemiologic relationship between cases of so-called catarrhal jaundice, epidemic hepatitis and post-vaccinal cases has not been clearly elucidated. Most observers agree that there is a striking similarity among cases of jaundice occurring in all three types, so that they are difficult to differentiate clinically or pathologically. Some vaccines and serums were held responsible for epidemics of jaundice because of the high incidence of jaundice following the use of particular batches and not with others prepared similarly. Another suggestive factor is the relative uniformity of the interval between inoculations and the appearance of jaundice. A recent study by Freeman [1] offers statistical data to support the thesis that jaundice is a communicable disease.

Freeman bases his conclusions on a study of spatial and temporal grouping of cases of jaundice in certain barracks and units at Camp Baker, Fort Belvoir, Virginia. The epidemic coincided in time and duration with the large epidemic among American troops during 1942. It was preceded by mass inoculation of troops with yellow fever vaccine prepared by suspending the 17D strain of virus in presumably normal human serum. The communicability of epidemic jaundice was sup-

4. Hamner, K. C.; Bernstein, Leon, and Maynard, L. A.: J. Nutrition **29:** 85 (Feb.) 1945.
5. Somers, G. F.; Hamner, K. C., and Nelson, W. L.: J. Nutrition: **30:** 425 (Dec.) 1945. Robinson, W. B.; Stotz, E., and Keretesz, Z. I.: ibid., p. 435.
6. Asenjo, G. F., and de Gusnian, A. R. F.: Science **103:** 219, 1946.
1. Freeman, G.: Epidemiology and Incubation Period of Jaundice Following Yellow Fever Vaccination, Am. J. Trop. Med. **26:** 15 (Jan.) 1946.

ported by a similar group of cases in units that received mildly "icterogenic" yellow fever vaccine at an earlier period and also by a thirty-six-fold attack rate in the unvaccinated population over the preepidemic rate during the major epidemic. The inoculation period ranged from two to four weeks, with a mode and mean of 3.2 weeks, a standard deviation of ± 0.72 and a coefficient of variation of 22.5 per cent. The particular yellow fever vaccine used in certain army posts appears to have had the property of predisposing its recipients to the communicable disease referred to as jaundice. This property varied in degrees among the several lots of yellow fever vaccine. The particular mode of transmission of jaundice has not been ascertained, but the common finding of personal association suggested dissemination by droplet or physical passage from hand to mouth. Flies may act as mechanical factors. Carriers and individuals apparently not infected probably play an important part in the epidemiology of jaundice. Freeman stresses that the interval of time between administration of yellow fever vaccine and the epidemic appearance of jaundice should not be referred to as the "incubation period," since it is not directly related to the incubation of an infectious agent. He concludes that all cases of jaundice at Camp Baker, whether or not yellow fever vaccine was administered, had a common origin, although proof must await isolation of the etiologic agent and the establishment of a specific diagnostic test.

Current Comment

ANGINA PECTORIS AND TOBACCO

The term "tobacco angina" has been employed for many years; its importance lies in the concept that smoking tobacco may constrict the coronary arteries and thus adversely affect the heart. Recently Pickering and Sanderson [1] studied several patients who developed cardiac pain of an anginal nature following smoking. One patient was subjected to many tests and careful studies without evidence being found that smoking produced coronary vasoconstriction; when the patient smoked before or during exercise, tolerance to exercise was not reduced. All the evidence, the authors say, was consistent with the view that smoking by this patient was a factor in producing anginal pain because it increased the work of the heart through the pulse rate and blood pressure. The use of tobacco, most cardiologists agree, is not the primary cause of coronary sclerosis, which is the pathologic lesion underlying angina pectoris. In the patient studied most completely, smoking produced anginal pain only in the period shortly after the disappearance of the pain produced by effort, and this occurred only if the pulse rate rose sufficiently. The British investigators believe that their studies provide an alternate hypothesis to the theory that constriction of the coronary arteries by tobacco is the cause of anginal pain precipitated by smoking; namely, that tobacco acts in this respect only by its effect on increasing the work of the heart. The investigation further casts doubt on the usefulness of the term "tobacco angina."

1. Pickering, G. W., and Sanderson, P. H.: Angina Pectoris and Tobacco, Clin. Science **5**: 275 (Dec. 12) 1945.

PSYCHIATRIC SELF OBSERVATIONS BY A PSYCHIATRIST

Dr. Frederic Wertham [1] reports an analysis of his mental state and his reactions in the course of a grave illness and two operative procedures. The sickness was thrombophlebitis of the right leg, with high fever, a general toxic condition and scopolamine anesthesia. The doctor was certain that emotional factors did not play a part in his reactions. During the first operation, which consisted in ligation of the right femoral vein, his attention was focused on concern with his body. He refers to Freud's well known statement that "the sick man withdraws his libido back upon his own ego and sends it forth again when he recovers." In the midst of the operation, during a period when the doctor was either anticipating pain or enduring it, he asked one of the physicians standing near him to find his wife and tell her that everything was going fine. This preoccupation must have been strong; he sometimes afterward asked the same thing again although he knew his previous request had been fulfilled. This would, in the doctor's opinion, indicate that Freud's formulation is an oversimplification of complicated levels and processes of emotional thinking. In the course of the operation the doctor saw a clock on the wall but was unable to read it. This particular symptom, known as agnosia, is seen in organic lesions of the occipital lobe such as occurs frequently in carbon monoxide poisoning. Probably definite disorders of the higher processes of perception, such as agnosia, may be a component of the disorder of comprehension in scopolamine intoxication. In the course of a second operation—ligation of the deep femoral vein in the left leg—the patient experienced what he characterizes as a form of scopolamine psychosis. The state was characterized by euphoria, overtalkativeness, general lack of inhibition and euphoric misjudgment of the situation side by side with more or less clear consciousness of apprehension and pain and flashes of insight. The doctor stresses the variety in the quality of pain and thinks that this aspect of pain has not been sufficiently appreciated by psychologists and physicians. He felt that after this operation he could have enumerated six or eight different kinds of pain, each sharply distinguishable from the other in quality. Some of the qualities of the pain were (1) localization, (2) duration, (3) after-image, (4) special qualities of pain, as when a nerve is touched, and (5) association with fear. Wertham concludes that from a practical point of view his analysis shows that there are definite and diversified psychiatric aspects of physical disease. Medical and surgical patients are in need of psychologic preparation for what they may expect. The psychologic features of physical disease are a part of medical and nursing care.

1. Wertham, Frederic: Thrombophlebitis with Multiple Pulmonary Emboli: Psychiatric Self Observations, Am. J. M. Sc. **211**: 166 (Feb.) 1946.

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MEDICINE AND THE WAR

ARMY

RELEASE CRITERIA FOR ARMY MEDICAL CORPS OFFICERS

Following are changes to War Department regulations that pertain to medical corps officers only:

Effective May 1, 1946 the following criteria will govern the separation of medical officers except volunteers and regular army officers. Adjusted service rating score sixty or thirty months' active service or 45 years of age to nearest birthday. Exceptions are officers in critical specialties, which remain the same as before. This category will be separated under the following criteria: Adjusted service rating of 60, or length of service thirty-nine months, or 45 years of age to nearest birthday. Medical corps officers on becoming eligible or relieved from active duty will be separated or board the fastest possible transportation for return to the United States within sixty days of date of eligibility. Medical corps officers surplus to requirement of major commands are returned to zone of interior from overseas within six months of eligibility for release and will be separated under provisions of section 2, circular 290, War Department, 1945.

ARMY OFFERS PAID INTERNSHIPS TO UNIVERSITY MEDICAL STUDENTS

The War Department has announced that junior class medical students now in approved civilian medical schools will be offered internships in U. S. Army hospitals starting July 1, 1947. These internships will differ from those offered medical school graduates for the ten years prior to the war in that interns selected will be given a reserve commission of first lieutenant in the Army Medical Corps. Under the former program interns in army hospitals were classified as civilian War Department personnel at an annual salary of about $1,000.

Internships under the present plan will enable the intern to draw the salary of a first lieutenant, or about $3,404 annually if there are dependents. If the intern has no dependents he will receive $2,972 a year. These figures include rental allowances of about $60 per month which are not paid when government quarters are furnished.

Designed to give the fifth or clinical year of training, the course will be of the conventional rotating type. This service in approved army hospitals is recognized by the Council on Medical Education and Hospitals of the American Medical Association and state boards of registration which require the clinical year of training before granting a license to practice.

"Medical school graduates are assured of an interesting and profitable career in army medicine if they elect to accept Regular Army commissions on completion of the clinical internship in army hospitals," Major Gen. Norman T. Kirk, the Surgeon General, declared. "Selections will be based on scholastic attainment, physical fitness and aptitude for military service. We expect to produce outstanding doctors through our educational program."

In notifying deans of accredited medical schools of the plan, the Surgeon General asked that they recommend not only men desirable as interns but men who will ultimately develop as Regular Army medical officers. A professional examination will not be required before the internship is accepted.

Applications may be submitted by students through the deans of their respective schools. They must reach the Office of the Surgeon General between June 5 and June 15 this year. Each applicant who successfully qualifies will be notified not later than July 1. He must accept or reject the appointment not later than July 8. Application blanks may be obtained from the deans of medical universities during May.

An applicant must conform to the basic requirements of being a United States citizen, a prospective 1947 graduate of a recognized school of medicine approved by the Council on Medical Education and Hospitals, not over 30 years of age on July 1, 1947, have no commitments to accept an internship appointment in any other institution and meet physical standards for appointment in the Medical Corps, U. S. Army. Physical qualifications are printed in Army Regulation 40-105.

ARMY AWARDS AND COMMENDATIONS

Lieutenant Colonel Andrew R. Hicks

Lieut. Col. Andrew R. Hicks, commander of the 180th Medical Battalion, was recently awarded the Bronze Star "for meritorious service in connection with military operations against the enemy from July 10, 1944 to Feb. 15, 1945." The citation stated, in part, "During the German counter offensive of December 1944 Lieutenant Colonel Hicks displayed marked professional skill and performed difficult surgical operations for a forty-eight hour period. When his outfit was captured by the enemy he negotiated for permission to continue operating on seriously wounded American soldiers. On his recapture by friendly forces, Lieutenant Colonel Hicks planned and supervised the expeditious evacuation of all personnel and patients of his unit." Dr. Hicks graduated from the New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1939 and entered the service June 26, 1941.

Colonel Joseph E. Cox

The Legion of Merit was recently presented to Col. Joseph E. Cox, Waynesboro, Va., for "exceptionally meritorious conduct in the performance of outstanding services in North Africa and Italy from Dec. 1, 1943 to May 8, 1945. Assigned the mission of converting his 250 bed station hospital into a 500 bed hospital to be used exclusively for the care of neuropsychiatric patients, Colonel Cox demonstrated outstanding ingenuity and professional knowledge in completing this assignment in a superior manner. During the year 1944 the new installation created by him was designated as the theater center for neuropsychiatric study, with a School of Military Psychiatry for the training of American medical officers. In addition, an extensive series of courses for the instruction of British nurses in neuropsychiatric nursing procedures was successfully completed. When, subsequent to the removal of his organization to Italy, it became necessary to divert to it a large number of medical and surgical cases, Colonel Cox promptly adjusted his highly specialized primary function as a neuropsychiatric center. Colonel Cox's contribution, both professional and educational, to the field of neuropsychiatry despite exigencies of the military situation, which at times rendered his task extremely difficult, are deserving of highest praise." Dr. Cox graduated from the University of Virginia Department of Medicine, Charlottesville, in 1934 and entered the service March 1, 1941.

Major Robert C. Hunt

The Army Commendation Ribbon was recently awarded to Major Robert C. Hunt, Rochester, N. Y., for superior performance of duty as neuropsychiatrist and chief of the consultation service of the command at Camp Wolters, Texas, from Nov. 28, 1942 to Jan. 9, 1946. "Because of his background of psychiatric knowledge, intense interest in human behavior and ability to work with people," said the citation, "Major Hunt has been of invaluable assistance to this center. The problem of adjustment which confronted all incoming recruits was ever paramount in Major Hunt's mind and his preventive work here has been as great as, if not greater than, his curative work. This has been of great value to the training program and is responsible for many training hours

saved that would otherwise have been lost. Major Hunt has interviewed and clinically diagnosed over 5,000 cases requiring neuropsychiatric treatment during his assignment here at this center. He has had to perform this work almost entirely by himself, competent assistants being lacking. He has been of great assistance to all unit commanders in rendering advice, analyzing problems and diagnosing cases of mental behavior before they became extreme, and discerning morale trends. Major Hunt has been a tireless worker, aggressive yet considerate, loyal, tactful and resourceful. He has proved to be a very creative officer with an inquisitive mind and an ability to visualize the need for corrective action plus the added ability to perform that action in a superior manner." Dr. Hunt graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1931 and entered the service Sept. 28, 1942.

Captain William Kropf

Capt. William Kropf, Bronx, New York, received a number of decorations, among them the Purple Heart with Cluster, the Arrow Head for first landing on Luzon, a Combat Medical Badge and a citation, which read "For meritorious achievement in connection with military operations against the enemy at Luzon, Philippine Islands, from June 1, 1945 to Aug. 15, 1945. In the long sustained, rapid advancement through Cagayan Valley, with extended supply lines over difficult terrain, Captain Kropf, as commanding officer of a medical collecting company, provided excellent and uninterrupted medical service. Through the combat, troops were usually deployed over many miles in length. Captain Kropf's skilful management, sound judgment and devotion to duty always resulted in speedy evacuation of sick and wounded from every position on the lines. His service was an outstanding example of efficiency and exemplified the fine traditions of the Army Medical Corps." Dr. Kropf graduated from the New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1933 and entered the service September 21, 1942.

Colonel Marcus D. Kogel

The Legion of Merit was recently awarded to Col. Marcus D. Kogel, Jamaica, N. Y., "for exceptionally meritorious conduct in the performance of outstanding service as medical inspector, China Theater, during the period March 29, 1945 to Nov. 1, 1945. Colonel Kogel, in a theater of operations noted for its numerous and unique tropical diseases and for its general insanitary condition, did by the exercise of his splendid professional knowledge of preventive medicine and the rare judgment, enthusiasm and foresight which he put into his efforts materially lower the health hazards threatening American troops in China. By the preparation of practical and appropriate preventive medical directives and by theaterwide inspections after their dissemination he caused the disease rates to be kept to a most satisfactory minimum and saved many United States troops from being ravaged by some of the most formidable diseases known to medical science. A great many American lives were undoubtedly saved as a direct result of Colonel Kogel's untiring efforts in disease prevention. He has uniformly carried out his duties in a manner which reflects the highest credit on himself and on the Army of the United States." Dr. Kogel graduated from the New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1927 and entered the service Feb. 13, 1941.

Colonel William J. McConnell

The Legion of Merit was recently bestowed on Col. William J. McConnell, New York, who, as chief of the Industrial Hygiene Branch, Safety and Security Division, Office of the Chief of Ordnance, from October 1942 to October 1945, served in the field of industrial health and hygiene. As a director representative of the Surgeon General, Colonel McConnell was charged with the development and supervision of a comprehensive program to prevent general illness and occupational disease and to promote maximum health and efficiency among civilian employees engaged in ordnance establishments throughout the United States, installations fraught with dangers of various toxic exposures requiring constant surveillance and control. The citation accompanying the award called attention to the fact that "Colonel McConnell launched into an aggressive program with unusual energy, foresight, perspicacity and comprehension, successfully reducing disabling illness from toxic explosives to an insignificant level, thereby insuring full utilization of available manpower for ammunition production. His cumulative accomplishments reflect great credit on himself and the military service." Dr. McConnell graduated from the St. Louis University School of Medicine in 1914 and entered the service Aug. 28, 1942.

Captain John R. Tobey

Capt. John R. Tobey, Newark, N. J., was recently awarded the Bronze Star "for meritorious service in connection with military operations against the enemy on Okinawa, R. I., on May 1 and May 25, 1945. In the village of Awacha on May 1, 1945 Captain Tobey voluntarily exposed himself to heavy enemy mortar fire in order to give aid to the wounded. While the aid station was displacing, Captain Tobey received a message that 2 severely wounded men were held in a defiladed position in the village and could not be moved because of the enemy mortar fire. With utter disregard for his own safety Captain Tobey went to the wounded men to administer plasma and medical treatment. While he was attending these men 3 more casualties, who were less seriously injured, had worked their way to the position. Captain Tobey continued to work until the last of the casualties had been treated and only then did he seek cover. Again on May 25, 1945 Captain Tobey moved forward to the vicinity of "Chocolate Drop Hill" near the town of Shuri, voluntarily subjecting himself to intense mortar and artillery fire in order to aid the wounded. Because of the nature of the terrain and bad weather it was necessary to make long litter hauls to get the wounded to the aid station. Captain Tobey therefore moved up just in rear of the position occupied by Company 1 so that immediate medical attention could be given before the long litter haul. In moving from 1 casualty to another he subjected himself to heavy mortar and artillery fire. Captain Tobey's courage and unselfish devotion to duty were an inspiration to all who witnessed his acts." Dr. Tobey graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1940 and entered the service July 28, 1942.

Major Bernard J. Mintz

Major Bernard J. Mintz, New York, was recently commended by Brig. Gen. A. Hornsby, who said "I wish to commend you for the outstanding manner in which you performed your duties as chief of orthopedic sections at Scott Field, Illinois, from March 17, 1944 to Feb. 14, 1946. The splendid record and relatively high degree of efficiency of the orthopedic section is largely due to the superior manner in which you fulfilled your assignment. The conscientious and diligent manner in which you performed your duties with the handicap of inexperienced assistants and enlisted personnel is a tribute to your capabilities. Assistants and enlisted personnel requiring on-the-spot training were frequently transferred so that the responsibility of surgical treatment, administration and the performing of detailed tasks evolved on you. Another commendable example of your work was the organization, development and supervision of the physical therapy department, which has treated an average of 3,000 patients monthly since its development. In view of these accomplishments and your subsequent honorable service, you are hereby authorized to wear the Army Commendation Ribbon by direction of the Secretary of War, in accordance with W. D. Circular 377, dated Dec. 18, 1945." Dr. Mintz graduated from the Boston University School of Medicine in 1929 and entered the service May 26, 1942.

Major Harry R. Chinigo

The Air Medal was recently awarded to Major Harry R. Chinigo, formerly of Flushing, N. Y., and he has been recommended for the Oak Leaf Cluster. Dr. Chinigo graduated from New York Medical College, Flower and Fifth Avenue Hospitals, New York, in 1937 and entered the service August 6, 1942.

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NAVY

BUREAU OF AGRICULTURE DEPARTMENT COMMENDED

The Bureau of Entomology and Plant Quarantine of the Department of Agriculture was recently commended by Secretary of the Navy James Forrestal and Vice Admiral Ross T. McIntire, Surgeon General of the Navy, for research conducted in the development of insect and mite repellents.

In a letter to the Secretary of Agriculture, Secretary Forrestal stated that the Bureau of Entomology and Plant Quarantine "rendered a fundamental and outstanding contribution to naval forces which has changed the entire methodology in the control of insect borne diseases."

Vice Admiral McIntire, in letters of commendation to Dr. P. N. Annand, chief of the bureau, and thirty-two of his associates, said that the immediate recognition of the great military potentialities of insecticides, such as DDT, aerosols, insect repellents and protective fabrics, resulted in their conversion to maximal efficiency for military use.

The close cooperation and assistance rendered the Navy by the Bureau of Entomology and Plant Quarantine were in a large measure responsible for the successful development of the repellents which made it possible to carry on our military campaigns in tropical areas with a freedom from disease formerly thought impossible, the Surgeon General pointed out.

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL CITED

A certificate citing the University of Wisconsin Medical School, Madison, for effective cooperation in the training of naval officer candidates was recently accepted by Dean Walter J. Meek in a ceremony held in the campus naval base office. The citation, signed by Secretary of the Navy James V. Forrestal, is "for effective cooperation with the United States Navy in the training of officer candidates in the Naval V-12 Program during World War II."

NAVY AWARDS AND COMMENDATIONS

Commodore Don S. Knowlton

A Gold Star in lieu of a second Legion of Merit was recently awarded to Commodore Don S. Knowlton, Washington, D. C., "for exceptionally meritorious conduct in the performance of outstanding services as division surgeon of a Marine infantry division during the planning for and conduct of operations against the Japanese enemy on Okinawa Shima, Ryukyu Islands, during the period from April 1 to June 21, 1945." The citation accompanying the award stated that during the preparatory phase of the operation "Captain Knowlton, with untiring efforts, supervised the organization and training of the medical battalion within the division. With keen technical skill and professional ability he trained his command to a high state of readiness for amphibious operations. During the assault phase of the operation the medical companies under his direction kept constantly in contact with the advancing front line troops, offering prompt and efficient medical aid and surgical treatment to those wounded or injured in action. The ability of the individual corpsman, the capabilities of the unit medical officers, the efficiency of the medical organization, the promptness of the evacuation of wounded, all attested to his brilliant leadership. Throughout the entire operation he demonstrated an extremely high degree of professional knowledge both as a member of the medical profession and as a naval officer. He kept constantly in touch with the rapidly changing tactical situation so that he might better employ the men of his command. His sound judgment, both tactically and medically, his inspiring leadership and his intense devotion to duty were ever an inspiration to the men of the division and aided materially in the furtherance of the operation. His actions throughout were in keeping with the highest traditions of the United States Naval Service." Dr. Knowlton graduated from Tufts College Medical School, Boston, in 1921 and has been active in the Naval Reserve for twenty-seven years.

Commander Richmond J. Beck

Lieut. Comdr. Richmond J. Beck, Huntington, L. I., N. Y., was recently commended "for distinguished service in the line of his profession as psychiatrist and embarkation-debarkation officer aboard the U. S. S. *Solace* from November 1943 to July 1945. During this period he displayed professional skill and ability, demonstrating outstanding zeal and steadfast devotion to duty in his handling of casualties evacuated from beachheads. He exhibited a high degree of physical fortitude and endurance in expert treatment of the wounded and was directly responsible for saving the lives of many men suffering from shock and other combat disabilities. His personal attention to detail and leadership were an ever present source of inspiration. His services and conduct throughout were in keeping with the highest traditions of the United States Naval Service." Dr. Beck graduated from George Washington University School of Medicine, Washington, D. C., in 1921 and entered the service Oct. 24, 1942.

MISCELLANEOUS

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

CALIFORNIA

Greens' Eye Hospital, San Francisco. Capacity, 35 beds; admissions, 1,326. Miss Marion I. Hamilton, Superintendent (resident—otolaryngology).

CONNECTICUT

Greenwich Hospital, Greenwich. Capacity, 151; admissions, 2,915. Mr. William J. Donnelly, Administrator (residents—mixed service).

DELAWARE

St. Francis Hospital, Wilmington. Capacity, 137; admissions, 2,301. Sister M. Philiberta, R.N., Superintendent (intern, July 1).

ILLINOIS

Ravenswood Hospital, Chicago. Capacity, 208; admissions, 5,324. Mr. George Swanson, Superintendent (2 residents—obstetrics-gynecology).

INDIANA

St. Catherine's Hospital, East Chicago. Capacity, 324; admissions, 8,102. Sister M. Cordula, R.N., Superior (interns; residents—mixed service).

NEW JERSEY

Cooper Hospital, Camden. Capacity, 447; admissions, 8,702. Mr. LeRoi A. Ayer, Superintendent (2 interns).

NEW YORK

Kingston Hospital, Kingston. Capacity, 223; admissions, 2,904. Miss Jessie P. Allan, R.N., Superintendent (2 residents—mixed service).

SOUTH CAROLINA

Columbia Hospital, Columbia. Capacity, 506; admissions, 8,902. Mr. P. A. Hodges Jr., Acting Superintendent (interns).

VIRGINIA

Norfolk General Hospital, Norfolk. Capacity, 397; admissions, 11,459. Mr. Richard J. Stull, Superintendent (interns).

WEST VIRGINIA

Charleston General Hospital, Charleston. Capacity, 335; admissions, 9,625. Dr. John E. Cannady, Medical Director (interns).

BRITISH ACHIEVEMENT IN THE ART OF HEALING

A thirty-five page pictorial booklet on the "British Achievement in the Art of Healing," by John Langdon-Davies, was recently published by the Pilot Press Ltd., London, and is being distributed by British Information Services (30 Rockefeller Plaza), New York. The pamphlet depicts the progress of the British medical profession during World War II and is but a sketch of what war experience gives us by way of hope for the future. It contains a story on the discovery of penicillin, its uses and methods of administration and also covers such subjects as wound shock, blood transfusions and the future, and rehabilitation.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Teague, Eldred B., 300 Oak St., Talladega.
Terhune, Samuel R., 2160 Highland Ave., Birmingham.
Warrick, William D., 2820 Fairway Dr., Birmingham.
White, William E., 1130 Woodstock Ave., Anniston.
Wilkerson, Arthur F. Jr., 442 Washington St., Marion.

Arizona

Bernstein, David, Major, Vet. Adm. Facility, Tucson.
Hall, Norman D., Lt. Col., 845 N. 4th Ave., Phoenix.
Holmes, Fred W., Capt., 94 E. Monte Vista, Phoenix.
Matts, Robert M., Major, Yuma County Health Service, Yuma.
Montgomery, Robert E. Jr., Capt., 1250 10th St., Douglas.
Schoch, William G. Jr., Capt., 1748 S. 6th Ave., Tucson.

Arkansas

Bogart, Clarence N., Capt., Forrest City.
Brown, Thomas D., Major, 718 High St., Little Rock.
Campbell, James H. Jr., Lt. Col., Joiner.
Dailey, William M., Capt., 703 9th St., Arkadelphia.
Galatzan, Joe S., Capt., 1719 Linden St., Pine Bluff.
Hayes, James D., Capt., 202 Donaghey Bldg., Little Rock.
McGehee, Edward P. Jr., Capt., Lake Village.
Mayfield, Hugh J., Major, 801 W. Main, El Dorado.
Pinnell, Robert, Lt. Col., Freiderica Hotel, Little Rock.
Smallwood, Raymond E., Major., 144 Park Hill, Hot Springs.
Woods, William M., Huntington.

California

Baisinger, Leo F., Capt., 250 Holthy Rd., Bakersfield.
Baldwin, L. Grant, Lt. Col., 5 E. Colorado St., Pasadena.
Bazzano, John J., Capt., 1270 Grove St., San Francisco.
Beaver, Meredith G., Col., Mariposa Dr., Redlands.
Bell, Ralph M., Major, 600 E. Hermosa St., Santa Maria.
Bray, Eulys W., Capt., 427 E. Main St., Turlock.
Bruckman, Fred S., Major, 384 Post St., San Francisco.
Campbell, Joseph G., Capt., 15 W. Quinto St., Santa Barbara.
Campbell, Roy, Major, 1218½ S. Westmoreland, Los Angeles.
Case, Robert B., Capt., 6107 Harwood Ave., Oakland.
Champion, John G., Capt., 1845 Purdue Ave., W. Los Angeles.
Collins, Thomas A., Capt., 1107 R St., Fresno.
Crawford, William E., Capt., 1226 8th St., Oakland.
Cutts, William F., Major, 18 Dos Caminos Ave., Ventura.
Fishbon, Harry M., Major, 1660 Divisadero St., San Francisco.
Friedlander, Richard D., Major, 15 Mesa Ave., San Francisco.
Friedman, Lawrence J., Capt., 130½ S. Kings Rd., Los Angeles.
Gilbert, Elmer W., Lt. Col., 1153 S. Garfield Ave., Alhambra.
Grant, Reuben S., Capt., 1908 Wilshire Blvd., Los Angeles.
Hauser, Vernon F., Major, 3015 W. Commonwealth, Alhambra.
Hawkins, Ralph L., Major, U. of Calif. Hosp., San Francisco.
Hayhurst, Joseph S., Major, 2 West Fern Ave., Redlands.
Ingle, Vernon A., Capt., 3501 Via Corona, Montebello.
Ishikawa, Tokio, Capt., 616 N. 6th St., San Jose.
Johnson, Harvey S., Capt., 10484 Troon Ave., Los Angeles.
Jones, Donald J., Capt., Route 5, Box 8869, Sacramento.
McClatchey, Warren S., Capt., 1327 31st St., San Diego.
McCloy, Neil P., Capt., 738 W. 104th St., Los Angeles.
McGuinness, Joseph S., Major, 126 6th Ave., San Francisco.
Mandel, Charles, Major, 216 N. Ardmore Ave., Los Angeles.
Manjos, Peter, Lt. Col., 1614 Cayuga Ave., San Francisco.
Messenger, Thomas T., Major, 216 Fresno St., Avenal.
Misrack, Maury L., Major, 578 Arguello Blvd., San Francisco.
Moore, Robert L., Major, 2103 Roanoke Rd., San Marino.
Nador, George, Capt., 3632 W. 59th Pl., Los Angeles.
Nahman, Morton S., Capt., 3440 Washington St., San Francisco.
Netzley, Ralph E., Capt., 851 E. El Molino Ave., Pasadena.
Newman, Ben A., Major, 6610 W. 6th St., Los Angeles.
Nichol, Walter E., Major, 111 S. Granville Ave., Los Angeles.
Peery, Leslie T., Capt., Rural Rt. 2, Yuba City.
Rogers, Thomas J., Major, 6526 W. 6th St., Los Angeles.
Satterlee, William C., Capt., 4651 Constance Dr., San Diego.
Schmela, W. W., Major, 14 W. Micheltorena St., Santa Barbara.
Schneider, Herbert H., Capt., 605 Yale Ave., Fresno.
Shershow, Albert, Major, 420 11th St., Paso Robles.
Spalding, William C., Lt. Col., 947 W. 8th St., Los Angeles.
Streaker, Lee H., Coast Highway, Goleta.
Tat, Russell J., 539 Market St., San Francisco.
Walker, Leon R., 152 E. Garvey, Monterey Park.
Weiss, Isidore I., Stockton State Hosp., Stockton.
Wever, George K., 242 N. Sutter St., Stockton.
White, Alfred S., 516 Sutter St., San Francisco.
Winn, Lawrence R., 6337 Newell St., Huntington Park.
Wolfson, Samuel A., 1317 Devon Ave., Los Angeles.

Colorado

Clark, Harry D., Lt. Col., 629 Humboldt, Denver.
Gibbens, Murray E., Major, Childrens Hosp., Denver.
Guggenheim, Albert, Capt., 1520 Hudson St., Denver.
Hinds, Ervin A., Lt. Col., 1616 Fairfax St., Denver.
McCammon, Robert W., Capt., 1317 Birch, Denver.
Stein, Hermann B., Major, 323 Bellaire St., Denver.

Connecticut

Szlemko, Emile A., 27 Poquonnock Rd., Groton.
Trantolo, Arthur, 2 Roberts Ct., East Hartford.
Tylec, Leo L., 359 N. Main St., Union City.
Weber, Frederick C. Jr., 25 W. Elm St., Greenwich.
Weinstein, Nathan, Cavray Rd., East Norwalk.
Welt, Louis G., 789 Howard Ave., New Haven.

Delaware

Taylor, Harvey G., A-1 DuPont Institute, Wilmington.

District of Columbia

Wolford, Roy A., 5259 Nebraska Ave. N.W., Washington.

Florida

Thompson, Richard P., 120 La Quinta Pl., St. Augustine.
Wilhelm, John A., Orlando.
Woodville, John B. Jr., Vet. Adm. Facility, Bay Pines.

Georgia

Brown, Stephen W., Major, 201 Liberty St., Milledgeville.
Crowder, Miles S., Major, Prof. Bldg., Griffin.
Eberhart, Charles A., Major, 1106 Med. Arts Bldg., Atlanta.
Hendrix, Arthur M., Capt., Ball Ground.
Hill, Arthur W., Major, Ga. State Health Dept., Atlanta.
Howard, Cluese L., Capt., PO Box 336, McIntyre.
Martin, Anthony J., 1st Lt., 2938 Lenox Rd., Atlanta.
Mashburn, James S., 1st Lt., Cumming.
Moore, Haywood L., Major, 26 N. Broad, Porterdale.
Thurmond, Allan G., 1345 Greene St., Augusta.
Turk, William B., PO Box 27, Nelson.
Williams, Charles R., Box 67, Wadley.
Withers, Samuel M. Jr., 409 S.E. 9th Ave., Moultrie.

Idaho

Budge, Bruce C., Major, Eastman Bldg., Boise.

Illinois

Baskerville, Edward M., Capt., 707 Buell Ave., Joliet.
Bates, Robert R., Capt., 818 Manor Ct., Joliet.
Beech, Robert D., Capt., 2110 W. Fargo Ave., Chicago.
Behr, Samuel, Major, 1822 National Ave., Rockford.
Bennett, Joseph R., Major, 7407 Kingston Ave., Chicago.
Berger, Samuel, 1st Lt., 3907 W. Adams St., Chicago.
Berwick, Philip, Capt., 165 N. Central Ave., Chicago.
Bornstein, Johann S., Capt., 5454 Everett Ave., Chicago.
Brennan, John F., Capt., Kingston Dr., East St. Louis.
Brosin, Henry W., Col., 950 E. 59th St., Chicago.
Brown, Francis J., Major, 134 W. Prairie Ave., Decatur.
Burt, Elliott P., Major, 409 W. Melbourne Ave., Peoria.
Burten, Saul, Capt., 100½ Cass St., Woodstock.
Bushnell, Lowell F., Capt., 172 N. Ridge Rd., Highland Park.
Campbell, Everett W., Capt., 1117 W. 61st St., Chicago.
Conlin, Edward J., Capt., 4256 Sheridan Rd., Chicago.
Cortesi, Loli R., Major, 2800 Fullerton Ave., Chicago.
Cousens, Marshall A., Major, 1819 S. Trumbull Ave., Chicago.
Cox, Fred G., Capt., 7310 Merrill Ave., Chicago.
Cross, James H., Capt., Dahlgren.
Ehrlich, Louis, Major, 3925 W. 16th St., Chicago.
Eisenstaedt, Werner F., Lt. Col., 3520 Carmen Ave., Chicago.
Friedberg, Stanton A., Major, 650 Wellington Ave., Chicago.
Gleason, Maurice F., Capt., 426 E. 51st St., Chicago.
Green, Martin W., Capt., 1908 St. Charles Rd., Maywood.
Greenspahn, Gerald M., Major, 66 E. South Water St., Chicago.
Haftkowski, Dominic J., Capt., 3222 S. May St., Chicago.
Halevy, Arthur A., Major, 5008 Sheridan Rd., Chicago.
Hanson, John O., Major, 5804 N. Maplewood, Chicago.
Helfrich, Loring S., Capt., 1640 Juneway Ter., Chicago.
Hirsch, Donald A., Capt., 1333 W. Rosedale Ave., Chicago.
Hohan, Eugene T., Capt., 2053 Bissell St., Chicago.
Hollander, John D., Capt., 734 N. 23d St., East St. Louis.
Irons, Edwin N., Major, 5830 Stony Island Ave., Chicago.
Jenkins, David M., Capt., 1905 E. Jackson, Bloomington.
Karay, George N., Capt., 516 S. Austin Blvd., Oak Park.
Krupka, John M., Capt., 3012 S. Maple Ave., Berwyn.

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PHYSICIANS SEPARATED FROM SERVICE

Illinois—Continued

McNally, Howard J., Major, 7907 S. Drexel Ave., Chicago.
Martin, Richard R., Major, 4309 N. Paulina St., Chicago.
Meier, Francis X., Capt., 925 26th St., Moline.
Morton, Joseph L., Major, Paris.
Murphy, James P., Major, 105 S. Finis St., Virden.
Neiman, Benjamin H., Lt. Col., 901 N. Euclid Ave., Oak Park.
Nelson, Thomas F., Major, 340 St. James Bldg., Jacksonville.
Noggle, Charles L., Major, 6121 N. Hamilton Ave., Chicago.
North, F. S. Jr., Capt., 1490 N. Green Bay Rd., Lake Forest.
Pessis, Benjamin H., Capt., 1306 S. Lawndale, Chicago.
Peterson, Ralph O., Major, 4869 N. Hermitage Ave., Chicago.
Pettry, Harvey H., Capt., Cowden.
Pomaranc, Mark M., 1st Lt., 7727 N. Hermitage Ave., Chicago.
Poremski, Thaddeus A., Capt., 5854 Wrightwood Ave., Chicago.
Purcell, Paul W., Capt., 7701 W. Belmont, Chicago.
Pyzik, Stanley W., Major, 2538 N. Kildare Ave., Chicago.
Randell, Harold E., Capt., 1464 E. 55th St., Chicago.
Ratner, Milton D., Capt., P. O. Box 1, Maywood.
Robbins, Joseph M., Capt., 4428 N. Marmora Ave., Chicago.
Robbins, Robert H., Major, 1101 Washington St., Waukegan.
Rodholm, Ansgar K., Capt., 950 E. 59th St., Chicago.
Sass, Louis A., Major, 3710 W. 70th Pl., Chicago.
Scheinberg, Schayel, Capt., Michael Reese Hosp., Chicago.
Schwartz, Bernard, Capt., 2709 Glenlake Ave., Chicago.
Slater, Roland A., Major, 711 Ravine, Peoria.
Sloan, Jack H., Major, 551 W. Roscoe St., Chicago.
Slott, Irving, Capt., 3048 Gunnison, Chicago.
Smith, George W. Jr., Capt., 1825 W. Harrison St., Chicago.
Smollar, Leo., Major, 4309 W. Flourney, Chicago.
Speer, Ralph E., Capt., 4342 Drexel Blvd., Chicago.
Standish, Myles, 1st Lt., 3323 N. Oak Park Ave., Chicago.
Steiner, Louis M., Capt., 6141 N. Talman Ave., Chicago.
Stine, Leonard A., 1st Lt., 5719 Kenwood Ave., Chicago.
Sukis, Anthony E., 3537 W. 111th St., Chicago.
Sullivan, Timothy, 104 15th Ave., Sterling.
Swiontek, Henry S., 2957 N. Spaulding Ave., Chicago.
Szczurek, Edward W., 5417 S. Paulina St., Chicago.
Thompson, Ernest L., 315 Hoff St., Pekin.
Tolentino, Angel P., 1354 S. Halsted St., Chicago.
Triolo, Anthony, 3900 W. Chicago Ave., Chicago.
Turow, Irvin L., 218 Barker Ave., Peoria.
Walter, LeRoy E., 1340 N. Dearborn St., Chicago.
Walton, Joseph E., Homer.
Weatherly, James A., Major, 108 N. 14th St., Murphysboro.
Webber, Max E., El Paso.
Webster, James R., 5226 Blackston Ave., Chicago.
Weil, Harry R., 5434 Ridgewood Ct., Chicago.
Weimer, James I., 621 Washington St., Pekin.
Weisdorf, William, 3101 Wabansia Ave., Chicago.
Weissbuch, Mitchell R., 5242 N. Kimball Ave., Chicago.
Willis, David A., 162 E. Ontario St., Chicago.
Wilson, Nathaniel D., 200 Estes St., Chicago.
Yacullo, William A., 3056 W. Jackson, Chicago.

Indiana

Banks, Horace M., Lt. Col., 1604 N. Capitol Ave., Indianapolis.
Barkley, Douglas F., Major, 200 Main St., Odon.
Benz, Owen F., Capt., 1916 Superior Ave., Whiting.
Birdzell, John P., Capt., 124 N. Main, Crown Point.
Boughman, Joe D., Capt., 402 N. Meridian St., Indianapolis.
Buchmeier, J. A., Capt., % Philip R. Mille, RR 1, Frankfort.
Covalt, Donald A., Lt. Col., 300 Winthrop, Muncie.
Crum, Marion M., Capt., 620 E. Maumee, Angola.
Daniels, Robert E., Lt. Col., 127 N. 3d St., Decatur.
Folck, John K., Major, 328 N. Hart St., Princeton.
Hare, Daniel M., Capt., Evansville State Hosp., Evansville.
Hartz, Francis M., Major, 212 E. Riverside Dr., Evansville.
Hasewinkle, A. M., Major, 1307 E. Rudisill Blvd., Ft. Wayne.
Henderson, Ramon A., Capt., Carlton Addition, Muncie.
Heritier, Claude J., Capt., 320 N. Chauncy St., Columbia City.
Hetherington, John A., Capt., 29 S. Audubon Rd., Indianapolis.
Hewlett, Thomas H., Capt., 36 Valley View Ct., New Albany.
Hill, Robert E., Capt., 525 W. North St., Muncie.
Hoover, J. Guy, Capt., W. Locust St., Boonville.
Korn, Jerome M., Capt., 611 Spring St., Michigan City.
McDonald, Joseph D., Lt. Col., 317 N. Wabash Ave., Evansville.
McDowell, G. A., Lt. Col., 2322 Forest Park Blvd., Ft. Wayne.
McEwen, James W., Lt. Col., 670 Cherry St., Terre Haute.
Matthew, W. B., Major, 1320 N. Delaware St., Indianapolis.
Miller, Richard C., Capt., 245 W. 38th St., Indianapolis.
Mullin, Joseph E., Capt., 1042 W. Michigan St., Indianapolis.
Norman, William H., Capt., 661 Berkley Rd., Indianapolis.
Paff, William A., Major, 412 Equity Bldg., Elkhart.

Indiana—Continued

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Rhorer, Roger J., Major, 1706 W. Sycamore St., Kokomo.
Romberger, Floyd T. Jr., Capt., 425 Little St., West Lafayette.
Rosenbaum, Lloyd E., Capt., 647 Citizens Bank Bldg., Anderson.
Rozelle, Clarence V., Capt., Forest Hills, RFD 8, Anderson.
Saide, Robert A., Capt., 421 E. 4th St., Michigan City.
Snyder, Morris C., Major, 247 N. Grahm St., Indianapolis.
Springstun, Walter R., Major, 635 S. Englewood, Evansville.
Storey, Destiny E., Rural Route 1, Washington.
Stucky, Elsworth K., 2342 N. Alabama St., Indianapolis.
Tanner, Henry S., 1142 N. Pennsylvania St., Indianapolis.
Thegze, Charles G., 2011 Clark St., Whiting.
Tinsley, Frank W., 2623 Guilford Ave., Indianapolis.
Tischer, E. Paul, 4534 N. Pennsylvania, Indianapolis.
Willis, Charles F., 2100 Bayard Park Dr., Evansville.
Woods, Halden C., 208 W. Morse St., Markle.

Iowa

Baltzell, Winston C., Major, 304 3d Ave., Charles City.
Block, Walter M., Capt., 845 1st Ave. S.E., Cedar Rapids.
Brown, A. W., Major, 6845 Ashworth Rd., West Des Moines.
Campbell, R. E., Capt., 2622 Country Club Pky., Cedar Rapids.
Chestnut, Paul F., Major, 115 W. Court, Winterset.
Clapsaddle, Dean W., Capt., Burt.
Cummins, George M. Jr., Capt., 215 Fernwood Ave., Davenport.
Dunn, Francis C., Lt. Col., 533 Knollwood Dr., Cedar Rapids.
Ellis, Howard G., Capt., 3333 Grand Ave., Des Moines.
Gaukel, Leo A., Capt., 716 W. Iowa, Onawa.
Goenne, William C. Jr., Major, 133 Forest Rd., Davenport.
Harris, Donald M., Capt., 2970 Isabella St., Sioux City.
Hungerford, William E., Capt., Avoca.
Hurevitz, Hyman M., Major, 1626 Marlo Ave., Davenport.
Johnson, Robert J., Capt., 712 W. 4th St., Cedar Falls.
McConkie, Edwin B., Major, 908 Merchants National Bank Bldg., Cedar Rapids.
McQuiston, W. O., Major, State U. of Iowa Hosp., Iowa City.
Martin, Lee R., Capt., 524 Harrison St., Council Bluffs.
Mater, Dwight A., Major, Knoxville.
Mauritz, Emory L., 1st Lt., 922 Equitable Bldg., Des Moines.
Ralston, Furman P., Capt., 917 Montgomery St., Knoxville.
Shea, Thomas E., Capt., Cherokee.
Smith, Roland T., Capt., 2320 York St., Des Moines.
Sternhill, Irving, Capt., 618 Forestere Blvd., Mason City.
Thompson, Robert V., 2410 Court St., Sioux City.
Todd, Vernon S., Eldora.
Trotter, Richard W., Lake City.
Walton, Seth G., Hampton.
Wanamaker, Ambrose R., Hamburg.
Wetrich, Max F., Manilla.
Whitmer, Lysle H., Wilton Junction.
Williams, Donald B., Vet. Admin. Facility, Knoxville.
Wolfson, Harold, Kingsley.
Wolkin, Julius, Thornton.
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Kansas

Wallace, Dean D., Norwich.
Wallace, Wayne O., 317 N. 3d St., Atchison.
White, John P., 216 N. 28th St., Parsons.
Wood, Douglas H., 413 W. Jefferson, Pittsburg.

Kentucky

Bush, Charles K. Jr., Capt., 4610 Southern Parkway, Louisville.
Buttermore, Willard M., Capt., Bardo.
Cameron, Donald B., Major, 1525 Dean Ave., Owensboro.
Caywood, Beatty E., Capt., 369 Maple Ave., Danville.
Cona, Joseph P., Capt., 334 Glendora Ave., Louisville.
Flowers, Samuel H., Capt., 2403 Cumberland Ave., Middlesboro.
Hall, Russell L., Capt., Amba.
Hancock, James C., Capt., Mayfield Highway, Fulton.
Hill, John C., Major, 4559 Southern Parkway, Louisville.
Houston, Wilbur R., Major, 37 Forrest Ave., Erlanger.
Huey, James M., Capt., Highway 42, Union.
Hunt, John S., Capt., 239 N. Broadway, Lexington.
Jarrell, Charles R., 1st Lt., Russell.
Mann, Shelton H., Capt., 2001 Eastern Parkway, Louisville.
Schultze, Joseph H., Capt., 1612 Scott St., Covington.
Sergent, Warren F., 1st Lt., Whitesburg.
Sloane, Augustus D., Capt., Paintsville.
Smith, Emery V., Capt., 706 Main St., Greenup.
Starr, Silas H., Major, 2339 Village Dr., Louisville.
Thompson, Morris H., 4628 Southern Parkway, Louisville.

PHYSICIANS SEPARATED FROM SERVICE

Maine

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Maryland

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Corner, George W. Jr., Capt., 4 Merryman Ct., Baltimore.
Edmonds, C. W., Capt., 614 Hastings Rd., Wiltondale, Towson.
Harris, Thomas W. Jr., Capt., 24 Fleet St., Annapolis.
Hecht, Manes S., Capt., 717 Lake Dr., Baltimore.
Mitchell, Robert B., Major, 704 Cathedral St., Baltimore.
Nachlas, Israel W., Lt. Col., 1814 Eutaw Pl., Baltimore.
Robinson, Harry M. Jr., Major, 244 N. Hilton St., Baltimore.
Robinson, Raymond C. V., Major, 6002 Harford Rd., Baltimore.
Rose, Edwin J., Col., 4701 Cortland Rd., Chevy Chase.
Schochet, George, Major, York Rd., Cockeysville.
Stegmaier, James G., Capt., 408 N. Centre St., Cumberland.
Waesche, Frederick S., Snow Hill.

Massachusetts

Baker, Donald V. Jr., Capt., S. Main St., Uxbridge.
Banks, Benjamin M., Col., 416 Marlborough St., Boston.
Barone, William D., Capt., 2 Elmwood Ave., Winchester.
Barry, John J., Capt., St. Johns Hosp., Lowell.
Barton, Lewis W., Major, 15 Bloomfield St., Lexington.
Bayles, T. B., Lt. Col., Robert B. Brigham Hosp., Boston.
Bengloff, Harold, Major, 251 St. Paul St., Brookline.
Bennett, Nathaniel N., Capt., 174 Harvard St., Brookline.
Berenson, William, Capt., 249 Summer St., Lynn.
Berk, Morton S., Capt., 52 Nottingham Rd., Brighton.
Blodgett, James T., 1st Lt., 125 Lexington St., Woburn.
Bolduc, Robert A., Major, 358 Lincoln St., Worcester.
Bragan, James A., Capt., 3 Nottingham St., Dorchester.
Cassin, Benjamin I., Capt., 195 Chestnut St., Chelsea.
Catino, Andrew C., Capt., 12 Folsom St., Revere.
Cave, Edwin F., Col., 11 Laurel Rd., Chestnut Hill.
Cherkas, Benjamin, Capt., 295 Concord Ave., Cambridge.
Chernoff, Arthur H., Capt., Saugus.
Coburn, Morton B., Capt., 48 Browne St., Brookline.
Cohen, Manley B., Capt., 47 Bowdoin St., Dorchester.
Cook, Aaron, Capt., 23 High St., Waterville.
Cooper, Francis L. Jr., Major, 26 South St., Brockton.
Corkery, James R., Capt., 6 Hancock St., Everett.
Cummings, Vincent P., Major, 57 Main St., North Adams.
Ellis, Victor, Capt., 1289 Commonwealth Ave., Allston.
Fiore, Autino, Capt., 93 Endicott St., Boston.
Frank, Albert A., Major, 600 Main St., Malden.
Gardner, Merrill F., 1st Lt., 50 Union St., Fairhaven.
Geller, Joseph, Capt., 48 Cedar St., Lawrence.
Ginsburg, Edward M., Major, 26 Euclid Ave., Quincy.
Grande, Gaetano G., Capt., 109 Chester Ave., Chelsea.
Griffin, Julian P., Capt., 170 Berkshire St., Indian Orchard.
Higgins, Donald E., Major, Main St., Cotuit.
Huber, William M., Major, 512 Beacon St., Boston.
Hyfer, Harry J., Capt., 14 Charlesgate W., Boston.
McCarthy, Charles J., Major, 466 Medford St., Somerville.
Mace, Roswell G., Major, 167 Long Hill St., Springfield.
Mallory, Tracy B., Lt. Col., 61 Hedge Rd., Brookline.
Nevitt, Francis W., Capt., E. Maine St., Falmouth.
Peckham, John M., Capt., 131 North Ave., North Abington.
Radovsky, Everett S., Capt., 1316 Highland Ave., Fall River.
Ragonetti, Victor V., Capt., 145 Court St., Plymouth.
Ritvo, Meyer, Capt., 485 Commonwealth Ave., Boston.
Rothman, Maurice S., Capt., 827 Southern Artery, Quincy.
Roy, Edward J., Capt., 156 Oak St., Indian Orchard.
Saccone, William A., Capt., 325 Malden St., Revere.
Saffran, Irving, Capt., 640 Adams St., Dorchester.
Schraffa, Francis P., Capt., 149 Putnam St., East Boston.
Shpiner, Leonard B., Capt., 420 Memorial Dr., Cambridge.
Shuman, Hyman, Col., 107 Prichard St., Fitchburg.
Spira, Bertram, Major, Worcester State Hosp., Worchester.
Taylor, Grantley W., 214 Buckminster Rd., Brookline.
Teahan, John W., 133 Chestnut St., Holyoke.
Tedeschi, Pasquale R., 270 Pearl St., Newton.
Thibodeau, Arthur A., 28 Bay View Rd., Wellesley.
Thomas, Jackson M., 102 Great Plain Ave., Wellesley.
Tracy, Robert J., 3 Monroe Pl., Concord.
Turner, John W., 20 Maple, Springfield.
Weiss, Louis R., 137 Fuller St., Brookline.
Welch, Claude E., 264 Beacon St., Boston.
Wetherbee, Winthrop Jr., 24 School St., Boston.
White, Seymour J., 453 Railroad Ave., North Andover.
Whitehead, Duncan, 1137 Main St., Leominster.

Michigan

Baird, Winston C., Capt., 209 Harriet St., Flint.
Baumer, Moe, Capt., 2901 2d Blvd., Detroit.
Beckett, Morley B., Major, 19 Oak Ct., Allegan.
Beeuwkes, Lambertus E., Capt., 7720 Calhoun, Dearborn.
Bringard, Elmer L., Capt., 18110 Fairfield, Detroit.
Burroughs, Roswell G., Major, Grace Hosp., Detroit.
Callaghan, Thomas T., Major, 16126 Indiana, Detroit.
Clyde, Ensign E., Capt., Mendon.
Cochran, William L., Major, 1313 E. Ann St., Ann Arbor.
Fisher, Dan W., Major, 918 Seymour St., Lansing.
Fisher, Robert E., Major, 23 W. Main St., Mayville.
Ford, Sylvester, Capt., 7310 Grand River Ave., Detroit.
Gano, Avison, Capt., 38 E. Monroe St., Bangor.
Goldhamer, Stanley M., Lt. Col., University Hosp., Ann Arbor.
Hammerberg, Kuno, Capt., Clare.
Hammond, George, Major., University Hosp., Ann Arbor.
Harrold, Jesse F., Capt., 1037 Glenhaven, East Lansing.
Hartwell, Shattuck W., Lt. Col., 1665 Jefferson St., Muskegon.
Heath, Leonard P., Major, 1013 David Whitney Bldg., Detroit.
Horan, Thomas N., Major, 890 Blaine Ave., Detroit.
Hummel, Arthur R., Major, 2239 Cadillac Blvd., Detroit.
McKean, Richard M., Col., 2984 Iroquois, Detroit.
Maibauer, Frederick P., Major, 2966 Biddle Ave., Wyandotte.
Marks, Ben, Capt., 18200 San Juan Dr., Detroit.
Meyers, Solomon G., Major, 16660 Baylis Ave., Detroit.
Miller, Perry L., Major, 121 E. Maumee St., Adrian.
Mouw, Dirk, Capt., Route 1, Grandville.
Nesbitt, William E., Capt., 312 S. 2d Ave., Alpena.
Penzotti, Stanley C., Capt., 235 Tecumseh St., Dundee.
Price, Alvin E., Lt. Col., 20100 Picadilly, Detroit.
Rypkema, Willard M., Capt., 1523 Sheldon Rd., Grand Haven.
Sargent, Leland E., 1st Lt., 114 N. Thompson St., Jackson.
Schultz, Elmer C., Capt., 111 Walnut St., River Rouge.
Seybold, Edward G., Capt., 740 Woodlawn Ave., Jackson.
Shulas, Irving B., Major, 16515 Baylis St., Detroit.
Silverman, Irving E., Capt., 428 W. Michigan, Lansing.
Sleight, James D., Major, 401 Security Bank Bldg., Battle Creek.
Sliwin, Edward P., Capt., 2295 W. Grand Blvd., Detroit.
Spector, Maurice J., Major, 18910 Greenlawn, Detroit.
Stanley, William F., Capt., 381 W. Woodland Ave., Ferndale.
Swartz, Fred G. Jr., 612 6th St., Traverse City.
Sylvan, Melvin M., 4557 E. Nine Mile Rd., Van Dyke.
Thompson, Hugh O., Arbutus Beach, Gaylord.
Timm, Oreon K., 59 Rose St., Battle Creek.
Wallace, Herbert C., 118 S. Oakley St., Saginaw.
Weller, Thomas H., 1130 Fair Oaks, Ann Arbor.
Wessels, Robert R., Harper Hosp., Detroit.
Wilcox, Leslie F., 505 Middlesex Blvd., Grosse Pointe.
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Zarafonetis, Chris J. D., 944 E. Fulton St., Grand Rapids.

Minnesota

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Carlson, Norman C., Major, Melrose.
Cress, Paul C., Capt., Ellsworth.
Darray, Cyril P., Capt., 1404 N.E. University Ave., Minneapolis.
Fleming, Dean S., Capt., 2205 Newton Ave., Minneapolis.
Frane, Donald B., Capt., 4333 Fremont Ave. N., Minneapolis.
Haisten, Arnold S., Capt., Mayo Clinic, Rochester.
Hill, John R., Major, 827 W. Center St., Rochester.
Humphrey, Irving L. Jr., Capt., 222 11th Ave. N.E., Rochester.
Mousel, Lloyd H., Major, 102 2d Ave. S.W., Rochester.
Nesset, Lawren B., Capt., 214 E. 19th St., Minneapolis.
Priestley, James T., Lt. Col., Mayo Clinic, Rochester.
Reinecke, Roger M., Capt., 4500 Edmund Blvd., Minneapolis.
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Watson, Richard E., 1631 Brenner Pass, Minneapolis.
Webster, LuVerne J., Otter Tail County Sanat., Battle Lake.
Weismann, Rodger E., Mayo Clinic, Rochester.
Wiechman, Fred H., Montgomery.

Mississippi

Campbell, George A., Major, Kosciusko.
Hossley, William J. Jr., Capt., 708 Farmer St., Vicksburg.
Moore, Thomas L. Jr., Capt., 303 N. Front St., McComb.
Nadeau, A. T. Jr., Capt., Jackson C. Health Dept., Pascagoula.
Ray, Robert B., Lt. Col., Kosciusko.
Rayburn, Charles W., Capt., Pontotoc.
Sheffield, William E., Capt., U. S. Vet. Hosp., Gulfport.
Sherman, Kenneth C., Major, 145 Elmer St., Biloxi.
Simpson, Rufus K., Major, 1603 36th Ave., Meridan.
Wilson, Joseph C., Route 1, Hollandale.
Woodbridge, John H., Tchula.

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PHYSICIANS SEPARATED FROM SERVICE

Missouri

Barrett, Ralph M. S., Lt. Col., 607 N. Grand, St. Louis.
Bassewitz, Paul P., Capt., 216 S. Kingshighway, St. Louis.
Bohrer, Edward R., Major, 111 W. Main, West Plains.
Bricker, Eugene M., Lt. Col., 105 W. Parkway, Columbia.
Brown, Samuel H., Capt., 436 W. 47th St., Kansas City.
Buck, Robert E., Capt., 4166 Lindell Blvd., St. Louis.
Crider, Russell J., Capt., 5565 Maple St., St. Louis.
Eidelman, Jack R., Major, 6557 University Dr., University City.
Fleming, Peter D., Capt., 4314 Lindell Blvd., St. Louis.
Gallant, Adolph L., Capt., 622 Eastgate Ave., St. Louis.
Gollub, Samuel W., Major, 741a N. Euclid Ave., St. Louis.
Hall, Robert A., Capt., 1627 Tower Grove Ave., St. Louis.
Herman, Allen I., Lt. Col., 467 E. Walnut St., Springfield.
Kennedy, I. Hall, Capt., RD 5, Springfield.
McNamee, William F., Capt., 7029 Rock Hill Rd., Affton.
Moore, Ernest M. Jr., Capt., Farmers Bank Bldg., Higginsville.
Pelz, Mort D., Lt. Col., 634 N. Grand, St. Louis.
Pipkin, Francis G., Major, 1318 Bryant Bldg., Kansas City.
Rosenberg, Henry E., Capt., 76 Lake Forest, Richmond Heights.
Sachs, Ernest Jr., Capt., 4475 W. Pine St., St. Louis.
Taylor, Van W., Bonne Terre Hosp., Bonne Terre.
Wepprich, Michael S., 512 W. State., Union.
White, Harvey L., 750 Yale Ave., University City.
White, Stoughton F., 1103 Grand Ave., Kansas City.
Whitten, Marion F., 636 Benton St., Poplar Bluff.
Wood, B. R., 7367 Overbrook Dr., Pasadena Hills, St. Louis.
Wray, Rolla B., 701 S. Adams, Nevada.

Montana

Honeycutt, Charles F. Jr., Major, West. Mont. Clinic, Missoula.
Weed, Vernon A., Kalispell.

Nebraska

Borgmeyer, Henry J., Capt., Dodge.
Bryant, Arthur R., Capt., 1415 S. 3d St., Beatrice.
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Fogarty, Charles J., Major, 1816 Wirt St., Omaha.
Haffke, Oscar W., Capt., 3103 N. 28th E., Omaha.
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McIlece, Raymond C., Capt., Lawrence.
Murdoch, James W. Jr., Capt., 826 S. 36th St., Lincoln.
Ryder, Frank D., Lt. Col., 1902 W. Charles, Grand Island.
Schneider, Albert L., Major, Box 443, Brady.
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Scott, Nathaniel C., Capt., 2511 S. 35th St., Omaha.
Tompkins, Charles A., 4201 William, Omaha.
Tucker, John G., 1630 Lincoln Ave., York.

New Hampshire

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Russell, Walter A., Capt., 34 Lincoln St., Somerworth.
Wheeler, John S., 116 School St., Concord.

New Jersey

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Baum, Lewis F., Major, 46 Chancellor Ave., Newark.
Benz, George L., Capt., 884 Bergen St., Newark.
Burkhardt, Hans E., Capt., 813 Central Ave., Ocean City.
Burstein, Frank, Capt., 72 Osborne Ter., Newark.
Calasibetta, Charles J., Major, 37 Longfellow Ave., Newark.
Cricco, Carl F., Capt., 708 Jefferson St., Hoboken.
Dante, Pasquale R., Capt., 446 Millburn Ave., Millburn.
Failmezger, Theodore R., Lt. Col., 125 Green Ave., Madison.
Francy, Donald G., Capt., 34 Main St., Matawan.
Frank, Nathan, Capt., 180 Bowers St., Jersey City.
Gebirtig, Theodore, Major, 35 Jefferson Ave., Morristown.
Groeschel, August H., Lt. Col., 31 Bank St., Sussex.
Gross, Charles N., Capt., 319 Atlantic Ave., Atlantic City.
Gross, Irving J., Capt., 128 Lakeside Ave., Verona.
Halnan, John J. Jr., Capt., 631 Madison Ave., Paterson.
Halsted, Harry C., Capt., 102 Hawthorne Ave., Nutley.
Hemphill, E. H., Capt., 274 Kings Highway E., Haddonfield.
Hirsch, John J., Capt., 191 Wallington Ave., Wallington.
Hoffman, C. A., Major, 1001 Sleepy Hollow Lane, Plainfield.
Horhovitz, George L., Capt., 324 S. Broad St., Trenton.
Hunter, F. D., Major, 3620 Nottingham Way, Hamilton Square.
Miller, Samuel D., Capt., 161 New St., New Brunswick.
Miranti, Paul J., Capt., 2700 Boulevard, Jersey City.
Pasternack, Elroy, Capt., 255 Harrison St., Passaic.
Pendexter, S. E. Jr., Capt., 11 S. Arlington Ave., E. Orange.
Price, Henry S. Jr., 1st Lt., 123 Washington Ave., Collingswood.
Probst, F. W., Lt. Col., 14 E. Park Pl., Rutherford.

New Jersey—Continued

Riddell, Richard V., Capt., 418 Grier Ave., Elizabeth.
Rocco, John D., Capt., 171 Parker St., Newark.
Rubba, Russell R., Capt., 21 Horton St., Hammonton.
Sadoff, Joseph, Capt., 116 Elmora Ave., Elizabeth.
Saltus, Lloyd S., Capt., 11 Headley Rd., Morristown.
Samuels, Sol L., Capt., 219 W. 7th St., Plainfield.
Sand, Abraham B., Capt., 454 High St., Burlington.
Shore, Benjamin R., Lt. Col., 279 Audubon Rd., Englewood.
Siegel, Simeon, Capt., 594 20th Ave., Paterson.
Suffness, Gustave, 8 Jefferson Ave., Elizabeth.
Trippe, Morton F., 702 Asbury Ave., Asbury Park.
Waldron, Edward L., 910 Stuyvesant Ave., Trenton.
Tsucalas, James C., 629 Bergen Ave., Jersey City.
Whinery, Joseph F., 53 Templar Way, Summit.
Woltmann, Charles E., 806 Hudson St., Hoboken.

New York

Andriola, Joseph C., Major, 3215 Netherland Ave., Bronx.
Atkins, Joseph, Capt., 110 Devoe Ave., Yonkers.
Bader, George B., Lt. Col., 103 E. 75th St., New York.
Baronas, Albert A., Capt., 28 Townsend St., Rochester.
Bassen, Edward J., Major, 654 Madison Ave., New York.
Bauer, Marshall A., 1st Lt., 22 Lattin Dr., Yonkers.
Benin, Harry, Capt., 1030 Carroll St., Brooklyn.
Berkman, Henry S., 1st Lt., 1732 E. 28th St., Brooklyn.
Berman, Benjamin, Capt., 1907 Mermaid Ave., Brooklyn.
Billow, Bennett W., 1st Lt., 2039 Broadway, New York.
Birkel, Peter F., Capt., 303 Woodlawn Ave., Albany.
Blum, Leon, Capt., 1 Everdell Pl., Far Rockaway.
Bodian, Martin, 1st Lt., 665 St. Johns Pl., Brooklyn.
Boorstein, Maccabee, Capt., 1150 Longfellow Ave., New York.
Brady, Joseph P., Major, 615 Sterling Pl., Brooklyn.
Brand, David, 1st Lt., 429 4th Ave., New York.
Braverman, Abraham H., Capt., 317 W. 89th St., New York.
Breslow, Leonard G., Capt., 1076 Eastern Parkway, Brooklyn.
Brown, Charles H., Capt., 73 Kingsboro Ave., Gloversville.
Brown, Richard C., Major, Kings County Hosp., Brooklyn.
Brussel, J. A., Major, Pilgrim State Hosp., Brentwood, L. I.
Carpenter, Walter T. Jr., Lt. Col., 445 E. 65th St., New York.
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Hoenig, Robert B., Capt., 146 Central Park West, New York.
Hollis, John A., Capt., 77 E. Main St., Norwich.
Holzberg, Ida R., Capt., 121 E. 60th St., New York.
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Hylant, John P., Capt., 909 Tonawanda St., Buffalo.
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ORGANIZATION SECTION

THE WAGNER-MURRAY-DINGELL BILL

Hearings on S. 1606—To Provide for a National Health Program

(NOTE.—*This is a condensation of the verbatim report of the hearings.*—ED.)

(Continued from page 47)

United States Senate, Committee on Education and Labor.

APRIL 16, 1946

HONORABLE JAMES E. MURRAY Presiding

PRESENT: Senators Murray, Pepper, Tunnell, Smith and Donnell.

Statement of Dr. R. L. Sensenich, Chairman of the Board of Trustees, American Medical Association

DR. SENSENICH: I have prepared, Senator Murray, in the interests of your committee, the members of which I know are very busy, a statement which I will ask be placed in the record. The statement has frequently been made that the action of the American Medical Association represents only a small group, a portion only of the Association, and it has variously and ungraciously been referred to as a clique, and comment has been made that it does not represent the attitude of the American medical profession.

SENATOR MURRAY: At the outset, I would wish to say that the committee does not recognize that at all, and we recognize the American Medical Association as representing the profession in this country almost completely, and we are satisfied with that fact.

DR. SENSENICH: I wish to state that the membership of the Association exceeds 125,000 physicians, and that its policies are determined by its House of Delegates, which numbers 175. This group is elected by the various state societies, and the representatives to the state organizations are from the county and local component societies. So that we do make the effort to have—

SENATOR PEPPER: I do not like to interrupt you, Doctor, except that you were speaking about the organization of the American Medical Association. DR. SENSENICH: Yes, sir.

SENATOR PEPPER: You say it starts with the county association? DR. SENSENICH: That is right.

SENATOR PEPPER: And the next is the state association? DR. SENSENICH: Yes, sir, Senator.

SENATOR PEPPER: And the next is the national House of Delegates, composed of representatives of the state associations? DR. SENSENICH: That is right, sir.

SENATOR PEPPER: Now, I was interested in the parliamentary procedure which prevails in the organization. Suppose that a county medical society, we will say in my county in Florida, desires to come out in favor of a particular form of health insurance, and they pass a resolution to that effect, in my county in Florida, that is the county medical association. How long would it take before that resolution of this county medical association would come before the House of Delegates in the regular order? DR. SENSENICH: That resolution might come first to the state House of Delegates, the state association, and from that group to the House of Delegates of the American Medical Association. However, there would be nothing preventing that county society from directly approaching a delegate to the House of Delegates of the American Medical Association and presenting to it this resolution or this action of the local component society.

SENATOR PEPPER: I got the impression from somebody, and I wanted you to advise me about the accuracy of the impression, that it took something like three years to get a matter of that sort finally before the House of Delegates and to get its decision on it. DR. SENSENICH: I am glad to discuss that, Senator Pepper, because the House of Delegates in each state meets at least annually, and on special occasions it may have extra sessions. At the present time, there is much discussion as to the advisability of meeting regularly two times a year, but we are subject to call at any time.

SENATOR PEPPER: There is no rule about any length of time that has to elapse, and there is no executive committee that has to give final approval of it? DR. SENSENICH: There is no screening; there is nothing to prevent or even discourage any county society from taking any action that it wishes, and that action may then be taken to the governing body of the American Medical Association. SENATOR PEPPER: All right.

SENATOR DONNELL: May I ask the Doctor one question, too, at this time? Doctor, what proportion in percentage would you say the 125,000 physicians who are members of the American Medical Association represent with respect to the entire practicing profession of medicine and surgery in this country? DR. SENSENICH: There are probably as many as 50,000 or 60,000 graduate physicians that are not members of the American Medical Association. Now, as to how many of them are actually in practice, it is impossible to say. There are men who graduate and then take executive positions in various life insurance companies, or in this or that group, but there is this number who are of themselves independent and are licensed to practice, and who can, as frequently as they wish express their wishes and their ideas and their positions on medical matters.

(Dr. Sensenich presented the action of the House of Delegates on the bill S. 1606.)

SENATOR TUNNELL: Could you tell us about the countries where this has been tried? Positive proof exists from experience in other countries, you say, that inferior medical service results from compulsory health insurance. DR. SENSENICH: I have visited Germany, France and England and have had some opportunity to observe the operation of the plans. However, I should prefer, if you will, Senator, that you would wait until a little later, when Dr. Walter Kennedy will go into that in detail. SENATOR TUNNELL: All right.

DR. SENSENICH: On page 4 of the brief there is the National Health Ten Point Program of the American Medical Association. It is to be regretted that for some reason or other this action of the American Medical Association and the effort that has preceded this statement of program, throughout many, many years, has not received the general recognition to which it is entitled. Too often the American Medical Association has been charged with being obstructionist and not in any way willing to accept any innovations or any changes in the matter of the provision of medical care.

The American Medical Association urges a minimum standard of nutrition, housing, clothing and recreation fundamental to good health. The responsibility for the attainment of this standard should be placed as far as possible on the individual, but the application of community effort, compatible with the maintenance of free enterprise, should be encouraged by governmental aid where needed. That is the background of the position that the American Medical Association has taken with reference to the Hill-Burton bill and other legislation which is pending.

SENATOR PEPPER: You would not think it would be socialistic for the federal government to aid in maintaining minimum standards of nutrition, housing, clothing, recreation and so forth? DR. SENSENICH: No, I think not, if there is need and the community is unable to do that for itself I think, Senator Pepper, that I believe your legislative efforts have been directed toward improving general standards of living. Now,

of course, the manner in which that shall be attained is the point which determines whether or not it is socialistic or what it is. The child should have throughout infancy proper attention, including scientific nutrition and immunization.

SENATOR PEPPER: You say that you would like to see every mother and child get the care that they should have? DR. SENSENICH: Yes, sir.

SENATOR PEPPER: And that would carry with it the provision of hospital care for every mother at childbirth? DR. SENSENICH: I think so, sir.

SENATOR PEPPER: And prenatal care also for the mother and the child? DR. SENSENICH: Yes, sir.

SENATOR PEPPER: And then the necessary care that the child should have after birth, in its health? DR. SENSENICH: Yes, sir.

SENATOR PEPPER: And you would recommend that whenever a mother is not financially able to purchase the needed medical and hospital care in such cases the government could properly and should properly make those things available to them? DR. SENSENICH: Yes, sir; however, I should distinguish there, Senator Pepper, as between the local government and local units and the federal government. I should dislike to have that made the basis of an overall governmental policy which disregarded the responsibility locally, from the individual on up.

SENATOR PEPPER: Obviously there would have to be some more hospitals built to give that much care to the mothers and children. DR. SENSENICH: Yes, sir.

SENATOR PEPPER: And probably some more physicians and nurses and so on? DR. SENSENICH: But that should be determined on the local need. That is the point which has been developed.

SENATOR PEPPER: And you think the local government could afford all of that needed service without federal aid? DR. SENSENICH: In most instances it could. Out in my own city I happened to pick up the statement of the board of health for last year, and out of some 2,600 and some births there were only 20 that did not take place in a hospital, and that is a mixed population, including Negroes and foreign and industrial elements.

SENATOR MURRAY: Are you familiar with the conditions in poorer states, in the South, Doctor, where they claim that they have not the means to build and maintain hospitals, even if the hospital was built by the federal government, and they would not be able to maintain it and support it through lack of sufficient means? DR. SENSENICH: I think that that is no doubt true in areas. Of course, Senator Murray, we must not lose sight of the fact that there are other things which will enter into the situation outside the actual construction of hospitals. You cannot have a community in good health that is not decently fed and clothed and cared for. The attitude of the American Medical Association and the physicians locally has always been that the need should be determined. Many communities that now do not have hospitals are ready and not only ready but actually have built up funds looking toward their contribution in part at least to the creation of local medical facilities.

SENATOR PEPPER: Taking the country as a whole, what percentage of the children are born in hospitals, do you recall? DR. SENSENICH: I do not have that. We will have later in the day some statistics from Dr. Joseph Howard, who was to have appeared on this program and unfortunately became ill.

SENATOR PEPPER: You say that you have not lost faith in the individual. That does not mean that all doctors render service on credit, however, does it? DR. SENSENICH: I do not know of any.

SENATOR PEPPER: There are a lot of poor people that have told me that they do not get a doctor if they do not pay the cash on the barrel head when he comes to render the service. DR. SENSENICH: That I could not argue, because I do not know all of your doctors. I would only insist on this, and I think that you would agree to it, Senator Pepper, that after all that is not the attitude of most physicians.

SENATOR PEPPER: I think a lot of this charity service that is talked about is a lot of hooey, and I think a lot of poor people can prove it.

SENATOR DONNELL: I would like to be recorded as supplementing what Senator Pepper has said. A good deal of talk about charity is the exact fact, because I have a profound respect for the charity and generosity of the medical profession. There may be instances to which the Senator refers in which he is quite correct, but my observation has been, and my view is that the medical profession has been characterized by generosity and charity.

SENATOR SMITH: I would like to record the same view. I just heard this as I came in. I want to protest against the suggestion anywhere in these hearings that the medical profession has not been a profession of out-giving service to the people of this country. I lived in a medical atmosphere from my childhood up, and I have been inspired all of my life by what the doctors have done for the people. That does not mean that there are not big gaps to be filled, but I do not like the suggestion that the doctors, as a whole, have not had the spirit of giving to the people of this country.

SENATOR TUNNELL: I do not see how they live if they do not collect, that is a practical side of it.

SENATOR MURRAY: I think we are all in accord that the medical profession has been most generous and charitable, but at the same time there is a limit beyond which it would be impossible to expect the medical profession to furnish medical care, proper medical care and hospitalization to people in various sections of the country. There is no doubt about that. I think that the doctors would be willing to do what they could, but they simply cannot handle the whole problem and it would be unfair to ask them, because the average income of the medical profession is pretty low. There are some parts of the country where they do not make enough money to continue in practice, and they have to leave there. I know of cases of that kind. So that you cannot expect a doctor to raise a family and maintain his family in a community where he cannot make a living, and that situation exists, there is no doubt about that. That is no reflection on the medical profession at all.

SENATOR PEPPER: I would like to say by way of clarification of my remark that I happen to have been delivered by an old country doctor, and in my youth on a little Alabama farm I had a chance to see the character of the country doctor, and as I grew up later I had a chance to see the family doctor, who is the typical doctor in the American mind, but I have also seen as I have grown older, and talked to more people, and I have heard more pathetic cases of where the specialization and the general commercial tendency that has invaded all of our life and the demands of the doctor, of course, for his own survival, have made it more and more common for the doctor not to come unless he knows he is going to get a fee for coming to visit the patient.

I have been in the homes of too many Negro servants that have worked in my house, and I have talked to too many others, to have them tell me that the doctor will not come unless he knows he is going to get the cash to take home with him when he makes his visit.

Now, as Senator Murray has said, I am not complaining about that, and I do not think that he owes medical service free to the community any more than the lawyer or the merchant owes it to give his goods to the humble. I do not think it is the problem of the grocer in a community to feed the hungry of the community. If the hungry exist, it is the community's obligation to feed them if they are needy. What this bill proposes is to take the individual out of the ranks of charity so that it will not be a beneficence if the doctor comes to see him, but to make it possible for the poor to provide in an honorable way for their medical and hospital care. But when time and again the proposition is made, in opposition to legislation like this, that the poor of this country can get medical care by charity, the statistics do not bear it out.

DR. SENSENICH: Senator Pepper, if I may ask you a question, how would you provide for this low-income group other than on a charity basis, if the income is insufficient to pay its reasonable proportion of the premium?

SENATOR PEPPER: I think the Wagner-Murray-Dingell bill would be the foundation of the answer to your question, and that would cover everybody who is in the payroll class, and they would pay probably a certain percentage of their payroll and the employer would pay a certain percentage of his payroll, just as they do now in respect to unemployment compensation, and then those who were not employed, so that they could not pay through the payroll tax, as this bill eventually contemplates, then they would be provided for by grants of federal funds, and those grants would be contributed by the federal and the state and the local governments, in my opinion, if you were to make the proper arrangement.

And it is certainly not socialized medicine, and it is not as you suggest here, anything that is sinister in character for a

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person to have an opportunity through a cooperative insurance system to provide in an honorable way for his own care, without being the beneficiary of charity.

DR. SENSENICH: The reason for discussing the matter of the Wagner-Murray-Dingell insurance provisions is with reference to the low-income group. One of them is that the insurance is not cheap from the estimates. Of course, I admit that there are no figures that have been given, but taking from the testimony of Mr. Altmeyer, if the individual even of a low-income family, with three earners, would contribute 3 times 27, or 81, and 3 earners, it is no small contribution.

SENATOR PEPPER: You will admit that the more people in the system, the cheaper it will be, is that not a fact, actually? DR. SENSENICH: It should be, yes, sir.

SENATOR PEPPER: And the only way you can get the price down so that the low income group of people can participate is to have the largest possible number of people in the system, is it not? DR. SENSENICH: Yes, sir.

SENATOR PEPPER: And the fewer the people in the system, the higher the rate will have to be, is that not true? DR. SENSENICH: It depends.

SENATOR PEPPER: Is not one of the basic principles of this compulsory insurance to bring in by public requirement the largest number of people so that we will have the lowest possible rate for the people who participate on ordinary actuarial principles? DR. SENSENICH: The point in question there, Senator Pepper, and I think you and I have discussed this at other times, is the fact that there is a tremendous concentration of poor insurance risks in this lower group, which means that the rest of the contributors to the insurance fund will pay out of proportion to their own risk in order to support a very large number of those who are not good risks.

SENATOR MURRAY: Are you discussing a voluntary system?

DR. SENSENICH: I am discussing any system in which you introduce into the picture a low-pay risk that goes in bad health and who will continue to contribute $27 a year and will be under continuous medical care and support, because the burden of that falls on the others.

SENATOR PEPPER: Have you not disclosed the real weakness of the voluntary plans? Just as I say, the major risk is among the poorest category of the people. DR. SENSENICH: They are not risks, they are burdens.

SENATOR PEPPER: I mean the poorest health risk. The greatest health needs are among the people of the lowest income groups. DR. SENSENICH: That is right.

SENATOR PEPPER: Now then, they are a burden as you say, if you put them into a system, so is it not the tendency of the voluntary plans, in order to avoid that burden, some category of the poorest of the poor, to attract primarily those in the upper income groups who are the best health risks? That emphasizes the very inherent weakness and failure of the voluntary plan. That leaves all of the people at the bottom of the ladder who need health care most, with the least ability to provide, so this compulsory insurance plan budgets them all in together, and yes, it does make the well-to-do and it makes those who need health care least come into the same system with those who are least able to pay and need the most. But is not that the only way that you are going to make it possible for those who need the most and are least able to pay, to get adequate care? DR. SENSENICH: Senator Pepper, the individual who does not have sufficient income, and this very low group that you refer to, should not and cannot properly be included in any insurance plan, and we have advocated for all time that they should be properly taken care of. In your own area, Senator Pepper, you discussed a moment ago the individual who could not receive medical care because he did not have funds. Actually that reflects on the local government, which should provide for every one who is unable to secure otherwise, but they are not properly an insurance plan.

SENATOR PEPPER: Is not public education on the same basis? There have always been throughout history a few healthy or well-to-do people who could send their children to private schools and have tutors in their homes with you that would have closed the doors of public education to the masses of the people. I remember when I was a boy, still hearing a lot of well-to-do people complain about having to pay to educate their neighbors' children, as they would have the power to do in the case of their own children.

Yet we live in a democracy here, where we say not only the rich man who could educate his own child by tutor or in a private school, but the man who has no children shall pay according to his ability to pay to educate the children of America. And I do not see any difference between that principle and the principle of compulsory insurance where we bring in those most able to pay, and those least needy of health care into a national insurance scheme so that the poor will be able to get not only education but health care.

DR. SENSENICH: The condition is not comparable, because the people in the school require a comparable amount of care and education and expense, whereas the group that we are talking about who are continuously sick are not on the same basis, comparable with the other individuals.

SENATOR PEPPER: The bachelor who has no children at all, he does not have any children to get the same amount of care, and yet he pays taxes on it.

SENATOR MURRAY: When you say "the group that are continuously sick," what do you mean by that? You do not mean that they are sick all of the time? DR. SENSENICH: Virtually so, there are many who are chronically ill.

SENATOR MURRAY: There are many, yes, sir, I know.

DR. SENSENICH: And those individuals, they are the recipients of charity when you make public contribution to a fund or they are the recipients of charity contributed by other members of the same insurance plan, if they are not fair and average risks.

SENATOR MURRAY: But we have a vast segment of our population that are not as poor as you indicate this group who are continually sick, that cannot afford the modern costly medical care and hospitalization, is that not true? DR. SENSENICH: Yes, in that case.

SENATOR MURRAY: You would not want to put them on the basis of having to accept charity, and to be classified as charity cases? DR. SENSENICH: Is the charity any different, Senator Murray, to those individuals than it is to the money that you contribute to the care of crippled children or for rehabilitation, or for any of the other special funds that are set up for individuals?

SENATOR MURRAY: Yes, I do, I think that we have people in this country who are employed and working and raising good families, and they should not be put in the position of having to be classified as paupers and unable to get proper medical care. I think that there should be some way of bringing that adequate medical care within their reach, so that they can maintain their dignity as American citizens, and I think if you will investigate as our subcommittee has investigated, you will find that in a great majority of the cases where people do become perpetual paupers, they started on that road through illness in their family and through debts which were accumulated as a result of their efforts to take care of themselves. DR. SENSENICH: There are a great many who are mentally deficient and who never could get on well in competition with the average, normal individual. There are many factors that enter into that and I think that we can state this definitely and all agree on it: That we are all seeking as an objective the best medical care for every one, and we are now discussing the means of accomplishing it, and it seems that it is hardly fair to include the entire group of individuals, the entire population in a plan that will in the end bring about a lowering of standard and deterioration of service in order to take care of a smaller group to whom we feel that whatever assistance is given them should be given in a manner not recognizable.

SENATOR PEPPER: You do not mean that the people who need the most and are least able to pay it are the smallest group? There are more of those people than there are the well-to-do people. DR. SENSENICH: It depends on what you mean by well-to-do.

SENATOR PEPPER: What do you consider it? How much income do you think a family head should have a year, in order to purchase the kind of medical and hospital care that would be available to the beneficiaries under this Wagner-Murray-Dingell bill? DR. SENSENICH: Senator, may I answer that this way. I recall when that statement came out purely on a matter of income. Let us be realistic and see the other side.

SENATOR PEPPER: I think that you would not mind giving me an answer to that. What income for the head of a family would be necessary in order to purchase for that family the medical care that would be available under the Wagner-Murray-Dingell bill to the persons covered? DR. SENSENICH: May I answer that in this way, that income buys varying quantities of service in various communities, and that, after all, I must insist that you have to look at the reality, and not the idea.

Now then, we must say on the other hand that no nation in the world—and may I answer this way, Senator Murray.

SENATOR PEPPER: Senator Murray is going to get mad at me if you keep calling me by his name.

SENATOR MURRAY: That will all go in the record in my name, and I will get credit for it, and he is getting jealous of it.

DR. SENSENICH: We have to be realistic and recognize that, after all, the major portion by far of the American population, and I mean the population of the United States, have had sufficient funds to get good medical care, and they have enjoyed a better standard of health than any other country in the world.

SENATOR PEPPER: Now, you do not mean to say, Doctor, that the majority of the American people have been able to buy in the past the medical and hospital care that they ought to have, do you? DR. SENSENICH: They have had enough to be well.

SENATOR PEPPER: Do you think the American people have all been well? DR. SENSENICH: Yes, I know that they have.

SENATOR PEPPER: Very well. Now, how about my figure. I wanted to ask you how much income you think the head of a family should have to have in order to buy in the private channels that are existing today the kind of hospital and medical care which is extended to the people covered by the Wagner-Murray-Dingell bill? DR. SENSENICH: There is no figure available.

SENATOR PEPPER: What is your opinion of the figure? DR. SENSENICH: The one that is quoted, and I could not off-hand say. It would be foolish for me to make an estimate. That should be studied.

SENATOR PEPPER: Could they buy it on $500 a year? DR. SENSENICH: Of course not.

SENATOR PEPPER: $1,000 a year? DR. SENSENICH: In some areas, they not only can, but do and have, but I personally think that that is not enough.

SENATOR PEPPER: You think if the head of a family has an income of $1,000 a year that he can buy in any community in America the kind of hospital and medical care that this bill would provide to the covered people? DR. SENSENICH: When those figures came out, Senator Pepper, as a matter of fact they included a number of people who live on small farms and derive almost all of their living off the farms.

SENATOR PEPPER: They do not derive their hospital and medical care off the farm, they do not grow that, do they? DR. SENSENICH: No, but they are not always in need of that much medical care. They may have their money available for that service to a much greater degree than the other individual that is on a salary.

SENATOR PEPPER: If they need hospital care and medical care of a sick child or sick mother or sick man in the country, as distinguished from the town or the city, is there a difference in that? DR. SENSENICH: There is a difference in charges, but that is not the point; if the individual has $1,000 to spend on those things, his money on the side, obviously he can buy service that the individual in the city cannot buy if that is his total income, and he has to pay rent and other things. There is no figure on that available which determines exactly what is necessary and could be determined only over a study of years and the average incidence of illness, confining it to those individuals.

SENATOR TUNNELL: I would like to ask a question here. As I understand your position, Doctor, you admit that there is an obligation somewhere, and you place it on the local community? DR. SENSENICH: That is possible, yes, sir.

SENATOR TUNNELL: I was protesting that it was not the duty of the doctor, I do not think the physician has the obligation to look after the health necessities of a community free. DR. SENSENICH: That is right.

SENATOR TUNNELL: That is too much of a burden. DR. SENSENICH: That is right.

SENATOR TUNNELL: It is just a case of where that obligation is. DR. SENSENICH: That is right. Finally, the House of Delegates in December of 1945, acting on several resolutions, adopted a resolution setting up the machinery of coordinating and developing to a greater degree the voluntary insurance plans in the various states, and that is incorporated in this report.

SENATOR MURRAY: Your judgment is, Doctor, that all of the proper medical care and service can be obtained by the American people through these voluntary systems that you have mentioned? DR. SENSENICH: What is that, all that need it? SENATOR MURRAY: Yes, sir. DR. SENSENICH: There are some who will never be incorporated in those plans.

SENATOR MURRAY: How many will be incorporated in those plans? DR. SENSENICH: That I cannot say, they have not had a sufficient time to develop.

SENATOR MURRAY: The American Medical Association always opposed those plans in the past? DR. SENSENICH: No, they have favored them for some years past, on an experimental basis, but there has been no actuarial experience, and it would be folly to have promoted or encouraged the establishment of a great many plans that would ultimately fail because there was not sufficient actuarial experience.

SENATOR MURRAY: Would it not be impossible at any time to develop these voluntary systems to such a degree that they would be capable of furnishing proper and complete medical care and hospitalization to the people of this country, I mean to say outside of those who are in the indigent classes, who are unable to contribute anything? DR. SENSENICH: Well, in fact, not every one would subscribe to any kind of insurance, and not every one whom you included in the compulsory plan would utilize the service that was obtainable under that plan. Just as long as you have individuals and a free government of course they will do as they like. However, a sufficient amount of education would stimulate interest.

Now, we are the most insured nation in the world. I think that we have some 80 million people covered by some kind of insurance. There is nothing like it anywhere, and with a little encouragement and more facilities available, there is no question that that would grow and continue to grow. However, there would be some who would not be included, but after all, we cannot control every individual.

SENATOR MURRAY: But these plans do not give adequate coverage in the way of medical care and hospitalization. For instance, would you describe some of the medical plans that you know of which you believe would be complete as an answer to this question? DR. SENSENICH: Some of the plans cover catastrophic illnesses only and surgery.

SENATOR MURRAY: Give me the name of some of them. DR. SENSENICH: I cannot give that off-hand, I would be glad to furnish that for the record.

SENATOR MURRAY: Well, you are familiar with the Michigan Medical Service? DR. SENSENICH: Yes, sir, you have a report on that.

SENATOR MURRAY: How does that compare with the coverage of the Murray-Wagner-Dingell bill? DR. SENSENICH: It does not include as much as the Murray-Wagner-Dingell bill.

SENATOR MURRAY: It only provides surgical care and a partial maternity care. DR. SENSENICH: And also partial medical care, as I understand it. However, there are areas in which the plans cover everything.

SENATOR MURRAY: I do not understand that it gives anything except the surgical care and the partial medical care. DR. SENSENICH: There are some of the plans, Senator Murray, that cover hospitalized illnesses and some others in which they are extending the service out to calls in the home. And there are some of those that are not included in these voluntary plans, but there are commercial plans that pay for service in the homes.

SENATOR MURRAY: But none of them cover complete service such as the bill before us? DR. SENSENICH: Not at this time, sir.

SENATOR MURRAY: And all of them have qualifications which make it available only to selected groups, people of selected groups? DR. SENSENICH: They were dependent in their early experience, while they were attaining some actuarial knowledge on some kind of selection, and therefore they had to limit it to people who were employed. Assuming the fact that they were employed meant some reasonable measure of health and so on. Those things have all obtained, but they are expanding now as their information increases.

SENATOR MURRAY: But none of them are getting away from those restrictions which were mentioned here? DR. SENSENICH: Yes, they are.

SENATOR MURRAY: My understanding is that most or all of these voluntary plans have restrictions. Some will not enroll persons above or below a specified age or persons not enrolled in groups, or persons above a specified income, and some are limited to particular occupational or other groups, and then the services are all limited, so that a person might be insured in one of those organizations for years and yet when he suffers a severe illness, he would not get any benefit, because the coverage is so narrow in scope that he would not be able to take advantage of his position as a member of one of those groups. DR. SENSENICH: That is all in process of develop-

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ment, Senator Murray. If you turn back to page 10 of my report, if you wish, there are certain standards of acceptance for medical care plans, and they will be encouraged.

SENATOR MURRAY: What page is that? DR. SENSENICH: Page 10, Senator Murray. It goes into the matter of provision to the subscriber in the contracts, and they are all operating under state law. They must be financially dependable, and as time goes on and experience and funds permit, the benefits are increased to cover additional risks and additional time of hospitalization and so on.

SENATOR PEPPER: Is it not a fact, following Senator Murray's inquiry, that only about 3 per cent of the people of the country are given, under the voluntary plans, anything like the comprehensive coverage that the Wagner-Murray-Dingell bill would extend? DR. SENSENICH: I cannot give you at the moment the exact percentage, I can give you that later. I will be glad to give that to the committee.

(Senator Pepper questioned Dr. Sensenich as to the minimum income necessitating medical charity.)

. . . . . .

SENATOR PEPPER: I have some statistics which show that in the family income group from nothing to $449, 6.9 per cent get any kind of charity in respect to health care, whereas 13.9 per cent of rural non-farm people get some charity and medical care in that group, and 17.3 per cent in the cities. Practically only one-third as many people in the country in that income group get any kind of charity in the medical field as get it in the urban areas. In all of the categories under $3,000 a year, in a group that was examined, 6.4 per cent got any kind of charity medical care, dental or otherwise, and 12.5 per cent in the other areas got some kind of charity. So that that shows that it is very probable that relatively few of the people who needed medical care and were unable to pay for it, got it by charity. DR. SENSENICH: But, Senator Pepper, you are assuming the probability that they needed the care. As a matter of fact we explored, some years ago, a number of those areas and found, much to our surprise, that even though they had no charity and they had very small incomes, they enjoyed very good health and their incidence of impairment was no greater than it was in urban communities with plenty of facilities available.

SENATOR PEPPER: Your position is that the people of the United States need relatively more hospital and medical care than they are now getting? DR. SENSENICH: In many areas it is true, and in many areas they need a great deal.

SENATOR PEPPER: What about the areas where it is not true?

SENATOR DONNELL: Would you pardon me just a moment, may I make a point of order, Mr. Chairman, with respect fully to the Senator and to the Chairman, I think the Doctor should be permitted to answer the question fully without interruption, and I know the Senator from Florida admits that, too.

SENATOR PEPPER: Had you finished that yet? I wanted to ask you about the many areas in which it is not true.

DR. SENSENICH: Then provision should be made, first of all, with facilities, and secondly, it should be determined what they need, and if they need medical men, and then the means to be provided. The thing that I do not like—I mean the profession generally, that is, not myself; I feel that way myself, and the rest of the profession—that the entire population should not be regimented into a plan simply to care for a relatively much smaller group. Now, I realize that you will say there are more than I say there are, and the best information available is the factual data which we had back here in 1940, which was a much more extensive survey than anyone else had made.

SENATOR MURRAY: What did that show generally, without going into detail? DR. SENSENICH: I really cannot answer the question without going into some detail.

SENATOR MURRAY: It showed there were good health conditions? DR. SENSENICH: Yes.

SENATOR MURRAY: How does that correspond with the reports of the Selective Service Commission which found that as a result of ill health and defective conditions, that 40 per cent of the boys examined had to be rejected? DR. SENSENICH: Senator Murray, we have a witness following me, Dr. Goin, who will go into detail on the draft situation.

SENATOR MURRAY: I merely wanted to point that out now, because that is in conflict with the statement that you just made. DR. SENSENICH: The assumption of 40 per cent is subject to considerable variation and also some correction, and if you will permit, we will have Dr. Goin tell you about that later.

SENATOR PEPPER: If you will permit me to call attention to some of the disclosures of our subcommittee's report:

"In fact, more than 23,000,000 people in the country have some chronic disease or physical impairment. On any one day, at least 7,000,000 people in the United States are incapacitated by sickness or other disability, half of them for 6 months or more. Illness and accidents cause the average industrial worker to lose about 12 days from production a year, a loss of about 600,000,000 man-days annually. Sickness and accidents cost the Nation at least $8,000,000,000 a year—half of this amount in wage loss and half in medical costs.

"Preventive services are inadequate—40 per cent of our counties do not have even a full-time local public health officer. Sanitation needs are great—846,000 rural homes do not have so much as even an outdoor privy. Hospitals are needed—40 per cent of our counties, with an aggregate population of 15,000,000 do not have a single recognized general hospital. Doctor shortages are severe—in 1944, 553 counties had less than 1 active physician per 3,000 population, the 'danger line,' and 81 had no active doctor at all. Even in 1940, before many doctors were drawn off to war, 309 counties had less than 1 active physician for every 3,000 people, and 37 had no active doctor at all. Maternal and child-health services are inadequate—it is estimated that half the maternal and a third of the infant deaths could be prevented if known measures were fully applied. Seventy-five per cent of our rural counties have no prenatal or well-baby clinics at all under the supervision of State health departments. State agencies had 15,000 children on their lists awaiting crippled children's care in early 1944. They do not even pretend to care for the half-million children with rheumatic fever (the most killing of all diseases for children between ages 5 and 15) or for the tens of thousands of cerebral palsy ('spastic paralysis') victims."

It was our opinion that the people of the United States are not getting the medical care that they should be getting.

DR. SENSENICH: That involves a good many things which will be covered by witnesses later, with reference to the distribution of hospitals and charity.

SENATOR MURRAY: You are not prepared to discuss with us the medical service plans that we have mentioned here? You have not made an exhaustive study of the different plans for prepaid medical care, that are being advocated?

DR. SENSENICH: We have a statement here from the director of our prepayment plan insurance group, and if I may have permission to have it included in the record, and that copy will be available to you.

SENATOR MURRAY: Will he appear here for cross examination? DR. SENSENICH. He is not able to.

SENATOR MURRAY: We would like to, if we could, discuss with someone representing your profession, the voluntary plans that are proposed and which you say are being developed. We think that it will be impossible to ever develop them to the degree that we will have a system that will furnish the American people with adequate modern medical care and hospitalization.

SENATOR DONNELL: I take it that the chairman does not mean to be expressing the opinion of all of the members of our committee in that statement. I say that with all due respect. I realize the chairman is of that opinion, but the committee itself has not yet passed on that question.

SENATOR MURRAY: I am modifying it to that extent, but I am satisfied that when they hear the evidence, they will recognize it.

SENATOR DONNELL: I mean no discourtesy to the chairman in the slightest, but the committee has not acted on that question.

SENATOR MURRAY: But I am satisfied when the committee hears all of the evidence, that they will agree with me, that it is impossible under any voluntary system in the United States, to furnish the American people with a system of prepaid medical care and hospitalization. I am so convinced of that, that I was led into the mistake of including all of the members of the committee, in support of the statement, and I will withdraw it now, and merely say that that is my judgment, and that is the judgment I think of every one who has made a study of these plans, and I am sure the testimony will convince you.

DR. SENSENICH: It was not possible to present a witness on all of these phases, in the time allotted to us.

SENATOR MURRAY: It seems to me that this is the most important phase. It seems to me someone from the American Medical Association should come here prepared to convince the committee that we can take care of this problem in the United States by a voluntary system. I do not know of anything more important than that, that somebody should come here to show us that the system which we propose is wrong.

DR. SENSENICH: If the chairman will permit, we have three other witnesses. One will deal especially with the matter of statistics as to need. We think first of all need is the most important thing to discuss. The second will deal with the hos-

pitals and medical facilities, and the third will deal with operations of plans of this type, and we have added the record from the head of our department of prepayment insurance, for a part of your record also, and may I say at this time that we will be happy to assist the committee in any way that we can in the consideration of the legislation.

SENATOR DONNELL: May I ask the doctor just a few questions, please? Doctor, I take it that all parties, physicians, and laymen as well, generally realize the importance of improving health conditions to as practicable an extent as possible. That is correct, is it not? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: And the American Medical Association has been keenly alive to that problem, has it not? DR. SENSENICH: That is right.

SENATOR DONNELL: And as pointed out in your statement at page 6, at a meeting of the House of Delegates of the American Medical Association held in Chicago December 3 to 5 of last year the House of Delegates made a report, a paragraph of which is quoted in your report as follows:

"All of these plans"—that is, referring to voluntary prepayment medical care plans—

"All of these plans show a uniformity of desire for the immediate setting up of a national plan on a voluntary basis. In all of them the urgency of this being done is stressed. Accordingly your reference committee recommends that the House of Delegates of the American Medical Association instruct the Board of Trustees and the Council on Medical Service and Public Relations to proceed as promptly as possible with the development of a specific national health program, with emphasis on the nationwide organization of locally administered pre-payment medical plans sponsored by medical societies."

That was passed? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: And there was a conference held in Chicago in February of this year at which time there was organized a corporation to be known as the Associated Medical Care Plans, a national nonprofit organization. Is that correct? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: And the details of the objects of the new corporation are set forth in your statement which is being filed with the committee? DR. SENSENICH: That is right.

SENATOR DONNELL: The point I desire to make, Doctor, is this: That the American Medical Association is approaching this problem with what it deems to be the utmost of speed consistent with efficiency in the solution of it. Is that right? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: I want to take this opportunity of concurring with our distinguished chairman in the importance of the American Medical Association presenting to this committee its views and its reasons for thinking that voluntary methods can be adopted, and I join thoroughly with him in the hope that the Medical Association will give to us the benefit of all such evidence as it can. Doctor, I would like to ask you one question at this moment, arising out of a comment, I think it was made by Mr. Green of the American Federation of Labor yesterday in his very interesting testimony. He suggested, in substance, that the source of the funds of various organizations which are opposing the plan embodied in S. 1606 be made the subject of inquiry, and in response to a question asked him he at that time indicated that he thought the American Medical Association was one of those organizations the funds to support which should be inquired into. May I ask you if you would be kind enough to state to the committee the source from which the funds which financed the American Medical Association are derived? DR. SENSENICH: I will be very happy to, sir. There is no secret about it. We have dues from the Fellows of the American Medical Association, and we receive no dues from the members of component societies. We publish certain medical publications from which there is some advertising income, and that is the source of our income.

SENATOR DONNELL: Do you have income from advertisements in THE JOURNAL which is published? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: Do you know about the proportion of the annual income which is derived from advertising? DR. SENSENICH: I could not say that offhand. I would be glad to give you that information. The point is that THE JOURNAL is furnished to each Fellow for $8, and THE JOURNAL costs more than that to publish. Now, there is some coverage from the advertising income, but it would not be possible to publish THE JOURNAL at that income per year if there was not some advertising from it. We have no other sources of income.

SENATOR DONNELL: I was doing the very thing that Senator Pepper was doing, breaking in on your answer, but would you be kind enough to furnish for our record a brief compilation of the sources of income of the American Medical Association during the year 1945? DR. SENSENICH: I will be very happy to. It is published each year in THE JOURNAL, and I will be very glad to.

SENATOR DONNELL: Another matter that I would like to ask you about is this: You spoke of the comparative health in the United States and other countries. Has there been a compilation of statistics on that question prepared and does it appear in your testimony? DR. SENSENICH: There has been one prepared. As little information is now available in war torn countries, the information that we have that we can depend on is of a little earlier date. I am under the impression that we had it in this report.

SENATOR MURRAY: While you are looking for that, I would like to call attention to the fact that Dr. Fishbein declares in his editorials in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION that health conditions and the standard of medical service are higher in the United States than anywhere else in the world, but at the same time it is found from an investigation in the country that the United States is not the healthiest country in the world. You take, for example, the infant and maternal mortality rate. In 1942, 40 babies died at birth for every thousand born. In one state the rate was 98, and 80 in another, and we find similar conditions in many parts of the country. My understanding is that a study of comparative health conditions in this country with some other countries of the world will show that the United States is not the healthiest country in the world.

DR. SENSENICH: Senator Murray, I will be glad to give you that information, and I think that that is included in the presentation of Dr. Howard. When you go comparing health statistics, you must know all the facts. When it comes to children, for instance, I picked up the report of the health department in my own city the day before leaving, and I regret I did not bring it along. The lowest rate quoted as I understand is Sweden, which is 2.9 per thousand, and South Bend was 2.6 and a half. The rate is very much better in Sweden than it is in a good many other places, but you must remember when you are dealing with infant mortality that there are ways in which the information is gained. I have it on good authority that the English do not record their infant mortality on the same basis that we do. I am letting others go into that in more detail, but the figures themselves are somewhat misleading. We have and we do maintain that we do have the best health, and I think that we can judge that. For instance, in New Zealand the figures given refer only to the European population, the white population. We include everybody in our statistics.

SENATOR MURRAY: Of course, when we discuss this problem, which is the healthiest nation of the world, we overlook the fact that even in the healthiest nations in the world and in our country here, notwithstanding the fact that it is comparatively better than other countries, still here in this country there are thousands of people every day going without medical care because they are unable to pay for it. There is no dispute on that. If a person wants to investigate it, it is a fact that throughout the country people in fairly moderate conditions fail to avail themselves of medical care because of the cost of it. They are afraid to. A man at the head of a family, with children going to school, and he is earning a fair income of, say, $2,000 or $3,000 a year, and he is afraid to incur the expense of medical examinations and medical treatment on account of the cost of the thing. There is no question about that, and it seems to me that some way must be found to make it possible for every one in this country to have access to the best possible modern medical care and hospitalization. We do not have it, and the country suffers severely as a result of ill health in this country. We lose millions of dollars every year, and nothing could be better for the welfare of our country than to have some system where every family can get this care without hesitation.

DR. SENSENICH: Senator Murray, I would not deny that there are people who should have medical care who are not getting it. From my own experience as a practicing physician for a good many years, and I do my turn on staff duty in the hospitals as well, I can say definitely that the number of people who come to me or appear as charity patients in the wards, or with whom I come in contact who are ill, who have not had medical care because they have neglected the case, because they feared the expense, is negligible as compared to the individuals who did not have medical care because they neglected it. That is our principal difficulty. I admit that there

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are areas and there are individuals where education, public health education and many things are lacking, and the whole problem is a little more complex than simply the provision of an insured medical service.

SENATOR PEPPER: Doctor, further referring to the report of the subcommittee made on page 3, we have compiled the data between the ages of 15 to 64, and this is from the National Health Survey. The data on the group between the ages of 15 to 64 show that in the category of less than $1,000 annual income they had 11.6 days of illness a year. In that group they received 2.2 doctors' calls. There is 11.6 days of illness and only 2.2 doctor's calls in the year in the group receiving $1,000 or less. In the group receiving $1,000 and less than $2,000, the same age group, they had an average of 7.9 days of illness a year, and they also got substantially the same number of doctors' calls. In the group below $4,000 they had 6.7 days of illness a year, and they received 3 doctor's calls a year. But when you get up in the highest group, above $10,000 a year annual income, you had less than 7 days' illness a year and yet they had 5.5 doctor's calls. So as you go from the bottom up in the economic scale, down at the bottom you find more days of illness and less doctors' calls. As you go up the ladder to the income group of $10,000 or more you find fewer days of illness and more doctors' calls. That obviously had a relationship to the ability to purchase the medical care. DR. SENSENICH: I am glad to discuss that with you. If that information was taken from the Public Health Service a few years ago you must recall that the individual who had one leg off was ill so far as the record was concerned. He was counted, although obviously he needed no medical attention. The individual who had permanent impairment of any kind was counted as ill.

SENATOR PEPPER: Leaving out for all the differences in the basis of the calculations, would you not say that it is a basically correct principle, as you said a while ago, that the need is greatest in the income groups least able to pay? DR. SENSENICH: Senator Pepper, we have a witness following me who I think will be able to show that in every insurance system in the world the period of illness increases, and the increase is very, very great.

SENATOR PEPPER: I was getting at the basic thing you wanted to tell us. Of course, we have not given you very much chance to tell us, but the basic thing you started off to say was that you admitted that the lowest income groups of the nation have the greatest need for medical and hospital care? DR. SENSENICH: That is right.

SENATOR PEPPER: Yet you felt it unsatisfactory to blanket into the same insurance system the people in those categories with the people in the higher income groups where the need for medical care was not so great, as I understood you.

DR. SENSENICH: Because you are going to increase the rate to the rest of the people. If this person is medically indigent, we will say, then he should be frankly so treated. I do not like to mislead the rest of the group, who do not have such large incomes, to carry the burden of this group here. I think that if they need assistance they should have assistance. We have said that again and again, but we object to the manner of assistance because we feel it will cause the deterioration of the quality of medical care and service to the rest of the people.

SENATOR PEPPER: I believe you also said a while ago in response to a question of mine that you did believe that the people unable to pay for the kind of medical and hospital care they needed should have it? DR. SENSENICH: That is right.

SENATOR PEPPER: If they are unable to pay for it and they should get it, by hypothesis, then the funds with which they shall get that care will have to come from some public source or out of the charity of the medical profession? DR. SENSENICH: That is right.

SENATOR PEPPER: If the funds come from a public source will that not be raised from taxation? Will not the people that pay the most of the tax be the people in the highest income group? DR. SENSENICH: But in this insurance plan you are not doing that.

SENATOR PEPPER: I am asking you, will that not be so? DR. SENSENICH: But the kind of tax at so much per head to the individual is not an even distribution.

SENATOR PEPPER: What I am asking is this: If we do not have an insurance system you provide out of the public treasury, federal, state or local, or all, the medical care needed by the people who cannot buy it in the regular way. That money will have to be raised by taxation? DR. SENSENICH: That is right.

SENATOR PEPPER: And will not the people that pay the tax principally be the people in the higher income group? DR. SENSENICH: But they will not under this plan.

SENATOR PEPPER: I am not talking about the plan. DR. SENSENICH: If you are going to confine it to that, to the insured group, then the insured group is going to pay the tax, not the group above. After all, if you are going to support it from taxation the whole group ought to pay it.

SENATOR PEPPER: Then, if the whole group is going to pay it, do you want to put a sales tax or some other tax, and make the full payment into the federal treasury of the funds that will be donated out later to make up this medical service? If they do, it is the same as the insurance principle. DR. SENSENICH: I think not. I believe the taxes are set up to include everybody and individual people according to ability to pay.

SENATOR PEPPER: You tax also according to ability. It is contemplated to be a percentage of payroll up to $3,000 a year. SENATOR MURRAY: $3,600.

SENATOR PEPPER: The figure I have heard is that the worker pays 1.5 per cent and the employer pays 1.5 per cent and the self-employed pay 3 per cent up to $3,000 a year. The fellow who made $600 a year would pay on the basis of what he made. The fellow who made $3,000 a year would pay on the basis of what he made. That affords the central part of the funds out of which these services would be provided.

DR. SENSENICH: May I say this, Senator Pepper: that after all the man who is insured and employed will pay once, but if he has 2 other earners then they pay 3. You are going to put the burden on one group, this insured group, in proportion to the number of earners in the family to accumulate a fund to carry the indigent and those in between indigency whose burden should fall on the whole group.

SENATOR PEPPER: If you provided funds out of the federal treasury by ordinary taxes would not the earning members of a family pay the larger part of the taxes? DR. SENSENICH: But not to the same degree.

SENATOR PEPPER: They would pay it in to the federal treasury. DR. SENSENICH: They would not pay that amount of tax.

SENATOR DONNELL: It seems to me, Mr. Chairman, that there is a very fundamental point that perhaps we have not emphasized in the questioning as much as we should have of the doctor. As I understand the doctor's views, he inclines certainly toward the correctness of the statement referred to at page 3 of his testimony, in which he quotes from the reference committee as follows:

"Positive proof exists from experience in other countries that inferior medical service results from compulsory health insurance."

Senator Tunnell directed a question along that line this morning. I would like to ask a few questions along this line. I proceed with the hypothesis that everybody, all of us here in this committee, and the doctors and the laymen alike, are interested in improving health conditions in our country. I am right in that, I believe. DR. SENSENICH: Definitely so, sir.

SENATOR DONNELL: I appreciate in your testimony, page 16, you point out statistics, as published in the Encyclopaedia Britannica Book of the Year, 1943, of the comparative death rates of the large nations, that the rate in the United States was 10.5, in England 12.9. England has a compulsory system, has it not? DR. SENSENICH: Yes.

SENATOR DONNELL: Germany 12.3, Bulgaria 12.5, Sweden 11.2, Chile 19.8, Japan 17.6 and New Zealand-European 9.8. DR. SENSENICH: That is right.

SENATOR DONNELL: So that the comparative death rates indicated there, it would seem to me, Doctor, tend to substantiate you that the health conditions in this country are on the whole certainly favorably compared with those of other nations. DR. SENSENICH: That is right.

SENATOR DONNELL: That does not limit the fundamental importance of attempting to improve the conditions? DR. SENSENICH: If we bring it down to 5.5 the American Medical Association would be very delighted.

SENATOR DONNELL: Yes, sir. May I supplement your testimony by pointing out that in addition to action of the House of Delegates, in addition to the formation of the corporation to which I refer, one of the purposes of which is, by authority granted by the state of Illinois, to quote your testimony:

"To promote establishment and operation of such non-profit, voluntary medical care plans throughout the United States and Canada as will ade-

quately meet the health needs of the public and preserve and advance scientific medicine and the high quality of medical care rendered by the medical profession of the two countries."

I say, in addition to that, I observe, as set forth in your statement, that a meeting of the commission to carry out these general ideas has been called for the 26th and 27th of this month. DR. SENSENICH: That is right.

SENATOR DONNELL: In Chicago. And you anticipate these plans will be presented for approval to the first meeting of the members of the corporation, now tentatively set to be held in San Francisco in July? DR. SENSENICH: That is right.

SENATOR DONNELL: Regardless of the fact that statistics seem to indicate our health conditions are perhaps better than we may realize, nevertheless the American Medical Association realizes the importance of the problem and is moving as rapidly as it can and as diligently as it deems practicable? DR. SENSENICH: That is correct.

SENATOR DONNELL: Doctor, your idea is that the experience of other nations shows that, however desirable of embracing within the beneficent jurisdiction of any health insurance plan as many people as possible a plan may be, compulsory insurance has proved too defective in that it produces inferior quality of medical service? DR. SENSENICH: And prolongs illness.

SENATOR DONNELL: And prolongs illness.

SENATOR MURRAY: Right there, could you have the doctor explain how he arrived at the theory that it results in the deterioration of medical care? DR. SENSENICH: May I look to the other witness who will follow me for that.

SENATOR MURRAY: That is very confusing to the committee, to have a witness make statements of that character and then not be able to substantiate them before the committee. DR. SENSENICH: They will be substantiated.

SENATOR MURRAY: These hearings are very complicated; and I wish we could settle some of these questions as we go along. I think it is unfair to make a bald statement of that kind and have to wait for some other witness to prove it. DR. SENSENICH: The witness is waiting right here, sir. However, I can go into this much of it: Immediately, when you remove responsibility and relationship between the patient and the physician and inject the government in between, the quality of service deteriorates.

DR. SENSENICH: When you go to the Surgeon General of the United States Public Health Service and give him the right to say who shall practice, who can come in, who cannot, what he shall be paid, the conditions under which he shall practice, there is no one in between the patient and the doctor?

SENATOR MURRAY: He operates with an advisory committee. DR. SENSENICH: He is not held by anything. I am sorry, sir; I did not mean to interrupt you.

SENATOR MURRAY: That is all right. He operates under an advisory committee, and that advisory committee works with him in determining the qualifications of these doctors and to determine who are specialists. This same practice is followed today by the medical profession, is it not, in the country, to determine who the men are who are qualified to act as specialists, in the big hospitals of the country? DR. SENSENICH: Yes, sir.

SENATOR MURRAY: Well, what is wrong, then, about the Surgeon General, working with the American medical profession and having their advice, specifying who the men are that are to be qualified as specialists? It is not true that under the bill the entire medical profession of the United States are placed under the direction of one man, the Surgeon General of the United States Public Health Service. Section 203 of the bill, which relates to administration, is concerned not with the administration of medical practice but with the administration of the system of paying for medical care. I do not see how the service would deteriorate. As a matter of fact, the greatest discoveries and advances in medicine have been made by men not actually practicing medicine. They are found in laboratories. Most of the great advances that have occurred in this country and other countries throughout the world have been the result of men working on salaries in laboratories and patiently studying and developing methods of cure for diseases. Is that not true? DR. SENSENICH: Yes. But those men are specialized in particular fields. That has nothing to do with the subject under discussion.

SENATOR MURRAY: Why should a doctor, physician or surgeon, permit his service to deteriorate merely because he is being paid out of a fund for the services he is rendering and being guaranteed that his services are going to be paid for when he performs them? DR. SENSENICH: Did the Veterans Bureau develop anything in twenty-five years of sufficient patients, of sufficient funds and sufficient establishment of that good service?

SENATOR MURRAY: I do not think that is any comparison. DR. SENSENICH: But that is government medicine.

SENATOR MURRAY: And you think this is government medicine? DR. SENSENICH: Yes.

SENATOR PEPPER: What about Walter Reed and the Naval Hospital? Do you claim Walter Reed and the Naval Hospital are inferior? DR. SENSENICH: I am not familiar with the work of Walter Reed and the Naval Hospital at the moment. Like every other institution, some have good work.

SENATOR PEPPER: That is true of private hospitals? DR. SENSENICH: Yes. On the other hand, let us not forget that the work of the war was done by private physicians in the Army. They have good men in the service, but there is something about the government service that deteriorates, and it has done so all over Europe.

SENATOR MURRAY: Has the service in the Kaiser hospitals deteriorated because the physicians are being paid? DR. SENSENICH: They have not operated long enough to know, and there are no available statistics.

SENATOR MURRAY: You are not saying they are not rendering efficient service? DR. SENSENICH: We accepted them for intern training, and after a little time we will be able to tell you whether the work is good or not.

SENATOR MURRAY: You do not have that here? DR. SENSENICH: It would be impossible to judge a few years under wartime.

SENATOR MURRAY: Our understanding is that the Kaiser hospitals and the system he has provided out there does furnish the most modern, adequate medical care to his men, and it has worked so satisfactorily that it has been extended to the families of the workers in his plants. DR. SENSENICH: Senator Murray, those things take a long time to find out what they amount to. I do not mean a "long time," but operation over some time.

SENATOR MURRAY: I am more interested in the middle class of this country, the people that earn all the way from $3,000 or $4,000 up to $7,000, $8,000 or $10,000 a year. I find around the country, talking to those people, that they have great difficulty meeting medical costs and hospitalization expenses. They tell me that when they go to a hospital they have their financial situation inquired into, and they are charged a very high fee sometimes. The doctors will investigate their financial situation and make them pay out of proportion to others. Does that system prevail in the country? DR. SENSENICH: It does not, sir.

SENATOR MURRAY: Have you not heard of cases where they charged $2,500 for an operation? DR. SENSENICH: I have heard of that in some instances. I think that is a rarity.

SENATOR MURRAY: You think so? DR. SENSENICH: I have had no personal contact with those big fees.

SENATOR MURRAY: Is that so? Well, I have had some contact with them, and I have a very vivid recollection of it. And I talked to another Senator about it. DR. SENSENICH: Perhaps, if I may interrupt, I did not investigate as well as you did.

SENATOR MURRAY: Well, I will tell you that any person that goes to a modern hospital today will find that he will have his financial situation investigated and he will be charged according to what they think he is able to stand. That is the system. I do not think the system is satisfactory to the American people, and I think that the great masses of the people want to find some way that they can get modern medical care without being overcharged and also get it without having to take a pauper's oath. I think there is nothing un-American about that, any more than the workmen's compensation laws or our present school system supported by the government.

SENATOR TUNNELL: Could I ask just one question, Doctor? In your comparison of health conditions in the United States and other countries do you think that is influenced by other things, such as hygienic conditions, including the kind of home, the standard of living, as the result of different wage scales, so that it is hardly just a comparison of medical treatment? DR. SENSENICH: Very greatly, sir. In these areas of such low economic income many factors enter into the health. Senator, may I say to the chairman, with reference to overcharging, do not mistake that. The American Medical Association does not approve of overcharging. You used that word. SENATOR MURRAY: Yes. DR. SENSENICH: We must not forget that the great bulk of the population in the United States lives in towns under 12,000, and if you could get a big fee, if you

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wanted to, out of any patient in a town of 12,000 the whole town would know it and exclude you from that time on. I have never known of that experience.

SENATOR TUNNELL: There are frequently differences as to what is overcharging? DR. SENSENICH: That is true.

SENATOR MURRAY: Doctor, you were discussing a short time ago the American medical profession and the fact that it collects a very large sum, is very strongly financially supported and has accomplished a great deal of good for the medical profession? DR. SENSENICH: And for the public as well, sir.

SENATOR MURRAY: And for the public as well, through their medical journals? DR. SENSENICH: Yes, sir.

SENATOR MURRAY: Very well. Are you acquainted with the National Physicians' Committee? DR. SENSENICH: Yes, sir.

SENATOR MURRAY: Can you tell me something about the National Physicians' Committee? DR. SENSENICH: I have no connection with them. The American Medical Association has no connection with them. They are a body of their own and for their own and have been interested in various things with reference to the medical situation. There is no tie-up between the two organizations. The House of Delegates has approved their objectives, but we have nothing to do with their management.

SENATOR MURRAY: But they are supported largely by members of the medical profession? DR. SENSENICH: They would have to give you that information themselves. I do not know.

SENATOR MURRAY: I see. Well, they circulate literature to the medical profession, do they not? DR. SENSENICH: I do not know, sir.

SENATOR MURRAY: Have you not seen that? DR. SENSENICH: I have some, but I do not know that that is general to the entire medical profession.

SENATOR MURRAY: I assume it is general because in every part of the country I have visited I find that the medical profession there are well stocked with propaganda from the National Physicians' Committee. In fact, on one occasion I attended a meeting of the medical profession where the speaker of the evening delivered an address which was a complete copy of the pamphlet got out by the National Physicians' Committee, in which this legislation is charged with being socialized or political medicine and makes misrepresentations from start to finish of the purposes and objects of the bill and the provisions. Have you seen that pamphlet? DR. SENSENICH: No.

SENATOR MURRAY: You have never seen it? DR. SENSENICH: I do not know the one that you speak of. I do not know the statement which you characterize as "propaganda," what the statement was.

SENATOR MURRAY: It was a pamphlet which they issued. And I will be glad to get a copy of that pamphlet and have it inserted in the record. It was a pamphlet which undertook to portray this legislation as socialistic, dangerous, and misrepresented practically every provision of the bill. You have never seen that? DR. SENSENICH: I am not sure that I have, sir.

SENATOR MURRAY: Well, it was distributed very widely across the country, and many hundreds of thousands of dollars was spent by that committee in circulating it and deceiving the profession to a very large degree. Medical men read that and believed it. I can see that from the fact that I received letters from them in which they quoted sections of the pamphlet to me which were entirely false. That committee, however, is a committee which is engaged in propaganda for the purpose of discrediting this legislation. You know that, do you not? DR. SENSENICH: No; I do not know that, sir.

SENATOR MURRAY: All right. I am surprised, because pretty nearly every person in the United States who has been following this legislation knows as a matter of fact that there is such an organization and just exactly what it is doing. DR. SENSENICH: Senator Murray, after all, those who disagree with us are always doing propaganda. That is the choice of the word I could not quite understand, sir.

SENATOR MURRAY: Well, I have a copy of the pamphlet here, and I will ask to have it inserted in the record at this point.

SENATOR DONNELL: Doctor, I thought it might be helpful if you could just give us one, two, three, four the statement of the reasons why you are opposed to S. 1606. I have your point that you think it would bring about a deterioration in service. And you quoted, as I take it, with implied approval at any rate, the report of this committee that positive proof exists from experience in other countries that inferior medical service results from compulsory medical insurance. That is point number one. DR. SENSENICH: That is right.

SENATOR DONNELL: Would you be kind enough to tell us the next point on which you oppose this bill? DR. SENSENICH: I would say, first of all, Senator Donnell, that the important thing is that there is nothing about this plan which has anything to do with preventive medicine. That is the first thing, nothing in it which establishes any standards of preventive medicine or accomplishes what we would like to see done. Secondly, it does bring about a deterioration of medical service because of the fact that it brings the government in in a manner in which the profession is regimented and the public is regimented; and that is not good.

SENATOR DONNELL: I want a concise statement of your general points. I think it might be helpful if we could center on some matters important but perhaps not quite as much along the line as giving us concretely your views as to this particular bill.

DR. SENSENICH: Senator, the second one, the statement you first quoted and in which I approved, is of course very broad. It not only tends to deteriorate the quality of service but those who give the service; not that they deliberately choose not to give the service, but the interest is different. It is a rather intangible thing. The third subdivision of that same point is the fact that it removes the free choice of physicians.

SENATOR DONNELL: Have you observed from your study of conditions in other countries any effect arising from compulsory health insurance where physicians have a certain number of persons beyond which they cannot go in treating them; have you observed any effect on the initiative of physicians? DR. SENSENICH: Yes, indeed, sir. And that is incorporated still further in the report you will hear from another witness.

SENATOR DONNELL: Which witness is that? DR. SENSENICH: Dr. Kennedy.

SENATOR DONNELL: Dr. Kennedy of New Castle, Ind.? DR. SENSENICH: Dr. Kennedy of New Castle, Ind., who has studied and had close connection in foreign countries.

SENATOR DONNELL: Yes, sir. DR. SENSENICH: So that the deterioration of services depends on those things not so tangible and things more tangible in the fact that it does destroy the choice of physician. Obviously the choice is limited only to those willing to accept the plan, and in every European country there are many who do not accept the plan. And for those who do there is a tendency to be crowded. The income is low, and they treat many more patients than the average physician would treat in a given period of time. Whenever you standardize the control by regulation you standardize at a low level. It is not the superior, it is the low level, because it must include everybody, and as a consequence there is that constant tendency to decline. And any time you remove the direct responsibility between the physician and the patient you incur an accumulated volume, we will say, of just omissions of one kind or another. They are not intentional. When I am called to see you, Senator, it is a responsible position, and only God and your doctor know whether you are getting good medical care or not. You cannot judge; and no one can follow up every doctor to determine how he does his work. Therefore it is important that the greatest responsibility exist between you and me. I must have that consciousness of the necessity and of the rightfulness of doing everything that must be done.

SENATOR DONNELL: Do you think the provisions of this bill, S. 1606, would tend to reduce the care and effort on the part of the physician or the initiative of the physicians or do you not? DR. SENSENICH: It diminishes the initiative, and over a period of time it tends to remove just the thing we are talking about, that responsibility. That is not so tangible, but, on the other hand, you will learn more from a discussion of where these plans have operated and what actually happened. That is the reality end of it. You cannot say what does it.

SENATOR MURRAY: I notice that the Senators here avail themselves of the opportunity of going to a hospital here for medical care without having any contact with the physician previously that treats them. They go to an administrative officer of the Navy here in Washington, and he assigns them to the hospital. DR. SENSENICH: Yes.

SENATOR MURRAY: They go to the hospital without knowing who the physicians are or anything about them, and they are very satisfied with the treatment and the care they get. I hear the comment frequently that this idea of relationship between the physician and the patient in modern medical practice is

more or less a myth. I know of cases where people have traveled all across the continent to go to a particular doctor, and when they get there they find the doctor is too old or sick, and they have to take somebody else whom they never heard of, and the operation is entirely satisfactory in every way. All members of the Senate and House go to physicians they do not know. I am sure if you left it to a Congressman to select his own physician in the community he would not know how to do it.

DR. SENSENICH: Senator Murray—

SENATOR MURRAY: Yet they talk about preserving the right to select your own physician. In modern times the average citizen of the country is not capable of selecting his own physician. That is to say, nine times out of ten he might make a very serious mistake. I think that the system here that we have where the medical men are classified whether they are to be experts and the kind of service they render is good, and a person can go to them qualified by education and experience, and the practicing doctor can do just as good a job as if they were selected by the patient from private practice.

DR. SENSENICH: Senator Murray, you are talking about an institution to a specialist. Let us bring that back down to the average practice that is not in the hospital itself. You go to some supervisor who authorizes you to go to the hospital. Suppose you are ill at 2 o'clock in the morning. Is the supervisor available? Does he approve of your admission? If you go to the hospital and you do not like the particular physician to whom you go, you are at liberty to change. But under this system you can change only provided the other man is included in your plan. There are many things that make a vast difference between your relationship with your physician under existing conditions where you are entirely a free agent and can do as you like. Or, on the other hand, there is the individual who is limited in his selection to those who have approved of the plan, which in some countries has not included the better men.

SENATOR TUNNELL: Let me suggest something which I think the doctor means but has not spoken clearly on. Would the poor doctor get just about as much practice as the best one under the theory you speak of? DR. SENSENICH: That is the way it works, because your standards must be low enough to include the whole number. They are never satisfied. The individual who is able to pay or has any means of getting outside the plan is very apt to go to some physician not included in the plan.

SENATOR DONNELL: I think Senator Tunnell touched on an important point. I would like to ask one question on it. Suppose there are 10,000 people in a community and 10 physicians. Under this plan we will say that the physicians in that community elect to adopt the per capita pay basis. Then the 10 physicians would announce themselves to be prepared to go in under the plan. We will presume that all 10 of them accept the plan. DR. SENSENICH: Yes.

SENATOR DONNELL: Whereupon there is assigned by the Surgeon General to those physicians a quota beyond which those physicians cannot go. DR. SENSENICH: Yes.

SENATOR DONNELL: There would be a very strong tendency, on the part of the Surgeon General in a given community to set aside 1,000 for each physician, or some variation, but at any rate the poor physician would, as Senator Tunnell so well indicated, be apt to have about the same number of persons assigned to him as the better physician. That is probable, is it not? DR. SENSENICH: That is right.

SENATOR DONNELL: It is a matter of tact and courtesy and judgment on the part of the Surgeon General; that is correct, is it not? DR. SENSENICH: Yes.

SENATOR DONNELL: May I ask you also, in that connection, would there not be a strong tendency on the part of the population, if they know one doctor was much better than another, to register very quickly under that doctor, so that the fellow who was late would find himself remitted back to the inefficient doctor? DR. SENSENICH: That is right.

SENATOR MURRAY: Before you leave that, you admit, then, that there are a lot of inefficient doctors in the country? DR. SENSENICH: Some doctors are better than other doctors, let us state it that way, sir. They have to meet certain requirements as to registration.

SENATOR MURRAY: They have the same fundamental education? DR. SENSENICH: Nearly so.

SENATOR MURRAY: Some doctors have what they call better "bedside manners" and make themselves more attractive to the patients? DR. SENSENICH: I do not think that amounts to much, sir.

SENATOR MURRAY: It is sometimes claimed that some doctors have personalities which attract the attention of the patients and which probably is an advantage. I am not criticizing it. DR. SENSENICH: May I answer that point? I do not think the matter of "bedside manners" is anything. Of course, a gentleman either sells himself or he does not. But as a matter of fact the one thing greatly overlooked in the discussion of legislation is the fact that you cannot divorce a man's illness from his personality. And there is one complaint that comes again and again and again; and that is that too often at the clinics they never get people well. It is a matter of attending physical illness and a continuing kind of symptom, whereas the individual needs a sympathetic understanding. Many times he is more disappointed than ill, more worried than sick. Many things enter into that, and the physician who can deal with that man's personality and restore him to his normal state in society as a responsible individual and some one who is at least fairly satisfactory to himself emotionally and mentally is the physician who has the patients. Let us omit the "bedside manners" and admit that there is that difference between physicians; and that is the kind of physician we want to preserve in the picture, because he is the man who serves best.

SENATOR MURRAY: Of course, men with those qualifications are favored in the community and get the best end of the practice at the present time under the present system? DR. SENSENICH: That is right, sir.

SENATOR MURRAY: And they cannot take care of all the people in the community? DR. SENSENICH: That is right.

SENATOR MURRAY: The result is that people in poorer circumstances are not able to get the services of those physicians who have such qualifications as you have described. DR. SENSENICH: They are not necessarily excluded, sir. Their selection is not on an economic basis.

SENATOR MURRAY: They are excluded if they cannot pay the fees. If they cannot come up to his requirements in the way of compensation they are. DR. SENSENICH: No, I think not, sir. I would not agree to that.

SENATOR MURRAY: Then the system is very precarious, it seems to me. The public is not able, nine times out of ten, to determine just who this physician is that has all these qualifications that you mention, and he just has to pick at random under the present system. It seems to me we ought to have a more definite system than that, where men are qualified in the modern medical care and methods of taking care of modern diseases. It should be scientific and not so much a matter of psychology. More or less science. DR. SENSENICH: Yes.

SENATOR MURRAY: And if a doctor is properly qualified to practice medicine and has gone through the proper training, has been an intern and has had experience, it seems to me that he can give adequate care without necessarily having some of these other qualifications as regards personality.

DR. SENSENICH: After all, you will admit the desirability of a certain amount of incentive, possibility of advancement, and of progressing. You must admit that even though you do have a very high percentage of physicians that are comparable in the high quality of their work and in attendance on things I discussed with reference to personality and so on and so on, yet if you take all the competition out of it, all the incentive and all the means of progressing and tie him down to a dead level with the rest of them, how long do you think he will continue to be the good kind of man we are talking about, as long as the Surgeon General assigns a certain number of individuals at a certain price?

SENATOR MURRAY: I do not see why he should deteriorate any more than the scientists deteriorate merely because of that. They sit away in a secluded spot and work out the problems, such as the scientists who developed the atomic bomb. It seems to me that the mere fact that they had no contact with anybody by sitting in there in a laboratory diligently and patiently working this out, they were just as competent as if they had been in a different situation where they had come in contact with the people waiting to have these bombs supplied. DR. SENSENICH: Senator Murray, you are familiar with the general exodus of scientists from government employment to the places where they were happier than they were in government employ?

SENATOR MURRAY: I am not. I do not know that the scientists who worked out the atomic bomb were unhappy. DR. SENSENICH: I do not know how many were on the atomic

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bomb. I know the scientists in the research work have gone back to where they were happier.

SENATOR MURRAY: That would be prefectly natural. DR. SENSENICH: That would be perfectly natural, and you must recognize that the physician is an individualist and if he is not satisfied in government employment he is not going to remain. Not all physicians will elect to take it.

SENATOR PEPPER: Well, a physician does not have to come under this plan. Any doctor in my home town, a choice doctor who has a big private practice, does this law make him come in? DR. SENSENICH: No, but I think that the head of Social Security the other day admitted that if the citizen wanted his services he had to pay twice. He paid the compulsory insurance and also paid his separately.

SENATOR PEPPER: That is correct, but the doctor himself, from the viewpoint of the doctor, does not have to come under this plan unless he agrees? DR. SENSENICH: But you would like to have him in the plan. I did not mean to interrupt.

SENATOR PEPPER: I think it would be desirable to have him in the plan. DR. SENSENICH: If you do not have them you would lead to the deterioration of service.

SENATOR MURRAY: The bill permits him to perform partial service under the plan and also remain in private practice. DR. SENSENICH: That has not worked out too happily, sir.

SENATOR PEPPER: Doctor, is not what you are saying based on ignoring the fact that everybody recognizes that this is not offered as a panacea for all ills and to make everybody happy and immediately well and keep them well? It is a question of comparison of this proposal and its effect, the good and the bad of it, with the good and the bad of the present system or the good and the bad of a system that is based on voluntary membership under various plans. Now, I am sure that nobody has attempted to give you the inference that this was a perfect plan, that it met everything that everybody would like to have met; but the essential problem is, is it in the overall better for the people of the country than the present plan or than a system of voluntary plans all over the country? Our opinions may differ about that. But should not one weigh against this case the masses of the people that do not have any doctor and can never get this high priced specialist that charges these big fees, and deserves them, for his skill? In life do you not find you have a balance of interests? DR. SENSENICH: Senator Pepper, that is exactly what we are trying to do, and I have with me today these witnesses who will present the very factual points.

SENATOR PEPPER: Very well. DR. SENSENICH: In an effort to establish first of all whether there is the need we think there is and what the effect would be on this or whether it would not be better to give a little time to some voluntary system.

SENATOR DONNELL: Doctor, returning to the question of freedom of choice, we will take this situation I mentioned where the per capita system of payment is agreed on by a majority of doctors, and at a given place we will say there are 10 doctors and 10,000 people, and we will say 1,000 are assigned to each one of those doctors. There is a difference in the ability of those doctors, just like lawyers, dentists, shoemakers and anybody else? DR. SENSENICH: That is right, sir.

SENATOR DONNELL: And some doctors are able to make greater success than others even though all of them have passed the examinations prescribed by the state laws and the examinations in the medical schools? DR. SENSENICH: That is right.

SENATOR DONNELL: Under this plan, as I understand it, in a case such as I have cited, if the people in a community recognize Dr. A as of outstanding ability, it would appear to me that his quota would be promptly filled? DR. SENSENICH: That is right, sir.

SENATOR DONNELL: And the other people, who did not get on his quota, would be remitted back to the other gentlemen? DR. SENSENICH: That is right.

SENATOR DONNELL: Some of whom may or may not be as qualified as Dr. A? DR. SENSENICH: That is right.

SENATOR DONNELL: The very fact that Dr. A has acquired confidence in the community is some evidence that he is better qualified than some other practitioner? DR. SENSENICH: That is right.

SENATOR DONNELL: Under the present situation, as we now have it, we have the privilege of going to a doctor and he has the privilege of determining whether he can or cannot take us. Is that right? DR. SENSENICH: That is right.

SENATOR DONNELL: There is no governmental compulsion? DR. SENSENICH: That is right.

SENATOR DONNELL: Whereas under the system I described there is governmental compulsion from which there can be no variation? That is correct, is it not? DR. SENSENICH: Yes.

SENATOR DONNELL: With respect to the situation here relative to Congress that the chairman referred to, I appreciate the fine services which Dr. Calver has rendered, and in the *Saturday Evening Post* there is a very interesting article on that. It is true that, if a number of members of Congress go to Dr. Calver, all Dr. Calver has any legal authority to do is to make recommendations which members of Congress may or may not follow? DR. SENSENICH: That is right.

SENATOR DONNELL: But if the law goes into effect, and Dr. Calver has 1,000 people, and 1,001 comes up, he cannot administer to the treatment of number 1,001; that is correct, is it not? DR. SENSENICH: That is right.

SENATOR DONNELL: Now, I want to ask you also, under this bill, what your opinion or judgment is as to the degree of power placed in the Surgeon General by the authority to designate the practitioners who shall be qualified as specialists or consultants? Do you regard that as a power that is fraught with some dangers, perhaps, to put it in one man's power to make that determination? DR. SENSENICH: There is no method provided by which he is judged. It is a bureaucracy in its administration.

SENATOR DONNELL: I observe that there is some statement that he shall determine for each specialist in accordance with general standards previously prescribed by him after consultation with the advisory council; but the authority to set forth the standards is vested in the Surgeon General, one man? DR. SENSENICH: That is right.

SENATOR DONNELL: And the very term "advisory council" speaks for itself, that the council is advisory and has no ultimate power? DR. SENSENICH: That is right.

SENATOR DONNELL: Even if it did have the power, it would vest in a group of men and women the power to determine whether or not out in my own home, or Senator Smith's home, or in Oregon or Washington, whether the particular person is or is not qualified to be a specialist? DR. SENSENICH: That is correct.

SENATOR DONNELL: Do you regard that as a desirable feature of this bill? DR. SENSENICH: I do not.

SENATOR DONNELL: You do not. I am not going to prolong this. I do want to ask you one more question though, in conclusion of the questions I would like to ask along this line: We had one witness here yesterday, who I am confident was actuated by the best motives, and yet he made a statement in substance that the opposition to this bill is not honest. That was the statement. This witness testified of respect for any honest opposition but made the statement that the opposition to S. 1606 is not honest. I want to ask you this question, Doctor: In your opinion as a practicing physician and as a member of the American Medical Association, do you think that the position taken by the American Medical Association is actuated primarily by selfish interests or by interests which have to do with the general welfare of the people of the United States of America, and I am going to ask you concretely in answering that question whether in your opinion the action of the American Medical Association was honest or dishonest in opposition to this bill? DR. SENSENICH: It is an honest opposition. It is definitely an honest opposition, and that is further evident in the program of health objectives and nearly one hundred years of performance. Remember that the government and the lay people have in no instance created the laws by which health is controlled. Our laws have come about at the recommendation of and by the stimulation of the medical profession.

SENATOR DONNELL: I said that was the concluding question. Your answer brings forth this thought. The American Medical Association contains about 125,000 persons and represents a very large percentage of the entire practicing members of the profession? DR. SENSENICH: Yes, sir.

SENATOR DONNELL: I realize asking you the question as to whether or not the action of the Association is honest or dishonest also means I was asking about your own honesty or dishonesty. That is embarrassing, and perhaps you are a prejudiced witness, but to my mind I think it is proper to ask an eminent member of the profession, just as you would a member of the Bar or a member of the Bench with respect to

the legal profession, and I want to ask you again this question, and I do close with this:

In your judgment as a practitioner, a man whose reputation is at stake, a man who occupies a position such as you do with the American medical profession, do you think that the position taken by the Association is taken as a result of some selfish interest of the profession, or is it a position taken as a result of earnest effort to try to bring forth a plan which in the honest opinion of the Association would best serve the health and public welfare? DR. SENSENICH: There is no question of the honesty back of it, and for the proper care of health measures. There is no question about the honesty in opposition of legislation which we feel will be harmful, and we will present such evidence as is available to prove that it is harmful.

SENATOR MURRAY: Doctor, we have equally important witnesses, men of high standing in the country, who feel that the American Medical Association is somewhat behind the times in regard to legislation of this kind, which is necessary for the protection of the health of the American people. We had a witness on the stand the other day who was a very prominent man, of the Harvard Medical School, Dr. Butler. Do you know Dr. Butler? DR. SENSENICH: Yes, I know Dr. Butler.

SENATOR MURRAY (Reading):

"It is inevitable that that association be so in terms of the manner in which its delegates are elected, the manner in which everything is referred to a special committee, that committee has members who were elected three, four, and five years ago, it is inevitable that such an association is behind the times. They have to be reactionary."

He also said:

"I think the major part of the opposition—let me put it this way: the major part of the publicity that is given the medical profession and the lay public reflects a selfish interest in maintaining the interests of doctors who are practicing medicine as they practice it today."

Again he said, in response to Senator Donnell's question:

"In other words, as I take it, your view is, and if I am wrong, please correct me, your view is that legislation such as S. 1606, will prove advantageous to the medical profession; second, that in the absence of such legislation of this type, financial embarrassment by the medical profession will generally ensue? Is that correct? DR. BUTLER. That is correct."

And the witness here the other day, William Green, testified that in his judgment this legislation is absolutely necessary for the country and that if it is not passed the American medical profession will be placing themselves in a very serious position, because the people of this country are going to insist on having proper medical care, modern medical care, for every citizen in the country, within their means. They have got to have it.

And it seems to me that the medical profession will be making a mistake if they do not sit down and study this legislation and propose what amendments they think would perfect it, because it is the only way in which you can bring modern medical care to the American people. DR. SENSENICH: Senator Murray, may I say that the competence of a witness and the usefulness of a witness depend largely on information and competence and honesty. The statement on the part of the doctor from Harvard University was not factual. As to Mr. Green, whom I have had occasion to meet a long time ago, I do not know that he is informed.

SENATOR MURRAY: He is informed on the condition of the health of his people. DR. SENSENICH: But he is not in a position to pass on the medical side of it, as to the determination of medical care and how to obtain it and the effect on medical care of this system.

SENATOR MURRAY: They have a division or subdivision set up on their organization, which is a very well organized body, and staffed by experts, economists, who have made a very careful study of this problem for the benefit of the American Federation of Labor, and its members, and they have come to the conclusion that legislation of this kind is absolutely imperative for the welfare of the country and for the welfare of the great working masses of people. DR. SENSENICH: Senator Murray, I am not reflecting in any way on Mr. Green, whom you know and whom I respect. However, this kind of problem cannot be answered by economists alone; that is the point I am trying to make.

SENATOR MURRAY: Surely. DR. SENSENICH: That also with reference to Mr. Green.

SENATOR MURRAY: And we are not seeking to present a piece of legislation here which is the result of the work of economists. We have had very distinguished doctors from all over the country who have cooperated with us and advised us with reference to this legislation. I have had letters from my own state of Montana in which doctors have given me their views on the bill, and many of them feel that this legislation is all right and that it should be passed. Members of the medical profession take that stand. I am sure you know that. DR. SENSENICH: There are some; a very, very small number.

SENATOR MURRAY: Well, I have attended meetings where they seem to appear in great numbers. DR. SENSENICH: The trouble is in those meetings there is a certain automatic selection. Those that are for go and those against do not. That is our experience, at least. May I say, Senator Murray, after all we want every one to have the best medical care, and we will cooperate with any one and anybody in the matter of procuring that care, if it is possible to get it. And we have met with your committee. Senator Pepper remembers it, and you remember too we met with your committee several times. We were in not so long ago with reference to the Hill-Burton bill. We are here not for the purpose of criticizing the people who developed this legislation or promoted it but rather to point out from a factual basis what its effect will be on medical care.

SENATOR PEPPER: Is it not fair to say that the representatives of the people, such as the Congress, have a perfect right to determine what in their opinion is in the public interest in helping the people preserve their health? DR. SENSENICH: That is right.

SENATOR PEPPER: And this is not a matter that the people have elected the doctors to decide for them. We have got a perfect right to draw up any data that we think are relevant to the subject and to legislate in this field as in other fields? That is correct, is it not? DR. SENSENICH: Correct, if I may answer one thing: I think they would expect that you would get the best advice you could get in the preparation of that legislation. I do not think any legislator with nonmedical experience is competent to judge. That is with all due respect.

SENATOR PEPPER: But you will have to admit in the trial of a case at law a witness who has got a personal interest in the matter, the jury is entitled to know that the witness has a personal interest in the advice he is giving? DR. SENSENICH: That is right, sir. But we must also know that the public has an interest.

SENATOR PEPPER: The difference of it is that we Senators do not make any more money if we pass a good health bill, but a doctor may make more if we do not. DR. SENSENICH: That is not the fact.

SENATOR DONNELL: Well, Mr. Chairman, I think it is only proper to state at this time that the testimony adduced up to this point by the proponents of the bill has been to the effect that the installation of S. 1606 and the plan thereunder will actually prove more beneficial to the doctors, as Dr. Butler indicated in his testimony.

SENATOR MURRAY: To the great majority of the medical profession. SENATOR DONNELL: Yes, sir.

SENATOR MURRAY: But not to those at the top of the medical profession.

SENATOR DONNELL: Well, I think, Mr. Chairman, the fact is that the American Medical Association is constituted of over 125,000 practitioners who are physicians all over the United States. DR. SENSENICH: That is right.

SENATOR DONNELL: They are representative, do you not consider, of the views of the medical profession taken by and large over the country? DR. SENSENICH: That is right, sir.

SENATOR DONNELL: And the House of Delegates has expressed its opposition to compulsory health insurance? DR. SENSENICH: That is right, sir.

SENATOR MURRAY: And the House of Delegates, according to some critics of the American Medical Association, is far behind the times in this field? DR. SENSENICH: I should not say that that was factual. They are elected for a two year term, and I have never known any democratic institution in which its government body or policy making body did not reflect the attitude and belief of its membership, when they are elected every two years.

SENATOR DONNELL: Is it your judgment that the House of Delegates does reflect the present, up to date opinion of the medical profession? DR. SENSENICH: There is no question about it.

SENATOR DONNELL: You mean to say you think it does? DR. SENSENICH: Beyond question.

(To be continued)

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National Health Program

PLATFORM ADOPTED BY THE AMERICAN MEDICAL ASSOCIATION

One of the ten points in this platform will be published each week.

5. The provision of health and diagnostic centers and hospitals necessary to community needs is an essential of good medical care. Such facilities are preferably supplied by local agencies, including the community, church and trade agencies which have been responsible for the fine development of facilities for medical care in most American communities up to this time. Where such facilities are unavailable and cannot be supplied through local or state agencies, the federal government may aid, preferably under a plan which requires that the need be shown and that the community prove its ability to maintain such institutions once they are established (Hill-Burton bill).

Washington Letter

(From a Special Correspondent)

May 6, 1946.

Invitation to Attend Inter-American Medical Congress at Rio

During a nationwide tour of the United States started this week from Washington, three Brazilian physicians will invite American medical men to attend the first Inter-American Medical Congress, to be held in Rio de Janeiro September 7 to 15 under the auspices of the Brazilian National Academy of Medicine. The Office of Inter-American Affairs reported that Dr. Estellita Lins, first vice president of the congress, Dr. Alvaro Cumplido de Sant-Anna, general secretary, and Dr. Antonio de Moraes Austregesilo Filho, son of the neurologist, will visit New York, Boston, Detroit, Chicago, Rochester, Minn., San Francisco, Los Angeles and Montreal. Ten United States authorities in special medical fields will be selected as honor guests of the Brazilian government at the conference. The trio reported that Sir Alexander Fleming, discoverer of penicillin, has accepted an invitation to be an honor guest from Great Britain.

Possible Cancer Benefits Expected from Use of the Betatron

Prof. Donald W. Kerst of the University of Illinois informed the George Washington University chapter of Sigma Xi, scientific society, of the possible uses of the betatron machine that creates cosmic ray effects in the laboratory. Possibilities that he mentioned were better study of the atom, permitting laboratory study of instruments that formerly had to be sent into the stratosphere, and cancer treatment. Professor Kerst was reported in 1940 to have produced 2,300,000 volts with the machine, later developing one of 20,000,000 volts. He is now building a betatron to produce more than 250,000,000 volts.

Washington Dope Traffic Called "Worst in Nation"

The Senate has approved expenditure by the Narcotics Bureau of an additional $50,800 to hire more agents, following a report by Senator Styles H. Bridges, Republican of New Hampshire, that the Washington drug traffic was a "national disgrace" and "the worst in the nation." The sum was included in the $63,000,000 second deficiency appropriation bill, which was sent to conference with the House. Senator Bridges said that the District of Columbia requires as many agents as New England or any five Western states.

Larger Hospital Reservations Advocated for the Tuberculous

Dr. Samuel Ingraham, U. S. Public Health Service tuberculosis consultant, has advocated that half of the hospital beds available in Washington be reserved for patients in the early stages of tuberculosis. However, spokesmen for the health department declared that it would be impossible to put the plan into effect now because of the shortage of nurses. Dr. Ingraham estimated that Washington has 11,000 to 15,000 tuberculosis victims, of which he estimated 4,000 need hospitalization.

Nurses Ask That Health Program Include Nursing Care

Miss Katharine J. Densford, president of the American Nurses Association, told the Senate Labor Committee holding hearings on the administration health bill that any national health program should include provision for "necessary nursing care." She declared that no national health program would be "considered complete" unless it provides for nursing care, not only in hospitals but in homes.

Health Center Bill May Go to House Before Preelection Recess

The bill for financing a 1,500 bed modern hospital center in Washington, to cost $20,000,000, may be sent to the House for action before the preelection recess now slated to begin July 1. One version of the bill was passed several months ago by the Senate. A report of the Metropolitan Health Council is expected to set in motion a new drive for legislation for the new hospital center.

Shrine to Build More Hospitals, Offer Scholarships

William H. Woodfield Jr. of San Francisco, imperial potentate of the Shrine of North America, reports that the organization plans to expand its free service to crippled children without regard to race, creed or color, to build more hospitals, to start construction of convalescent homes and to offer scholarships to orthopedic surgeons and nurses. He made the report during an official visit to Almas Temple of Washington.

Development of Curvature of the Spine in Victims of Infantile Paralysis

Dr. E. C. Harper, director of crippled children's services for the Virginia State Health Department, has reported that approximately 100 youthful victims of the 1944 infantile paralysis epidemic in Virginia already had gradually developed curvature of the spine, although they were believed to have been cured.

Civilian Aid Urged for Handicapped Persons

Dr. Howard A. Rusk, originator of the Army Air Forces convalescent training program, has urged civilian hospitals and communities as a whole to set up rehabilitation centers to aid the one out of every six persons in America who needs "some sort of rehabilitation help." He is a member of Bernard Baruch's permanent committee on rehabilitation and a consultant to the New York *Times*.

Veterans Administrations Watching Health of Employees

Veterans Administration supervisors throughout the country have been instructed to watch the health of agency employees. A directive suggests training in health practices, analysis of causes of absence for sickness, health improvement training and other corrective measures.

Encephalitis Among Forces Occupying Okinawa

American occupation forces on Okinawa are menaced by a form of encephalitis, but the navy is reported to have under study a vaccine to combat the ailment. Commodore T. M. Rivers of the Navy Medical Corps made this revelation to the National Academy of Sciences. Navy doctors got first hand information during an epidemic among natives last summer.

Clinic Service for Epileptic Patients

Announcing the opening of a clinic service for the epileptic here beginning May 6, Dr. Leopold E. Wexberg, District of Columbia mental hygiene bureau chief, estimated that there are 400 epileptic children among those of school age. He said that epilepsy is curable in children through modern methods and that attacks on adults could be reduced.

Council on Medical Service and Public Relations

NEW ENGLAND REGIONAL CONFERENCE

The Council of the State Medical Societies of New England cooperated with the Council on Medical Service and Public Relations in sponsoring a regional conference in Boston, Sunday, February 3. The conference was attended by representatives from New Hampshire, Connecticut, Massachusetts, Rhode Island, Maine and Vermont. Dr. James R. Miller, president of the Council of State Medical Societies of New England and member of the Board of Trustees, presided. Council members present were Dr. Roger I. Lee, President of the American Medical Association, and Dr. Louis H. Bauer, member of the Board of Trustees and the Council. The speakers were Mr. Jay Ketchum, executive vice president of Michigan Medical Service and chairman of the Advisory Committee on Prepayment Medical Care Plans of the Council; Dr. Louis H. Bauer; Major Gen. George F. Lull, General Manager of the American Medical Association; Dr. Joseph S. Lawrence, director of the Washington Office of the Council; Dr. Fritz Arestad, assistant secretary of the Council on Medical Education and Hospitals; Dr. W. W. Bauer, director of the Bureau on Health Education, and Dr. C. Charles Burlingame, chairman of the Committee on Public Education, American Psychiatric Association, and chairman of the Committee on Public Relations of the Connecticut State Medical Society.

As President of the American Medical Association Dr. Lee opened the meeting with a few short but pertinent remarks on the phases through which public movements seem to go—the emotional phase, the political phase and the reasoning phase. "It seems to me," commented Dr. Lee, ". . . that we have been through two of these phases, the emotional phase and I believe and trust we are emerging from the political phase, and we now come to the last phase, which is the intelligent, rational phase in which hard thinking . . . is very much in order. And that, I take it, is what the Council on Medical Service and Public Relations is going to do."

Progress of Voluntary Medical Care Plans.—Mr. Jay Ketchum called attention to the rapid growth in both enrolment and the number of plans during the twelve months that ended in June 1945. Within this period the number of plans jumped from thirty-five to fifty-three and the enrolment from around 975,000 to over 2,500,000. "The voluntary plan," said Mr. Ketchum, "has come out of the experimental stage. We know it will work. During the past five years a whole generation and more of discussion, of planning and of hope have borne fruit."

Fourteen Point Constructive Program.—Dr. Louis Bauer gave a short review of the A. M. A. Fourteen Point Constructive Program. "A great weakness," he said, "lies in our county societies. They have waned in influence and are poorly attended. Men do not come out and learn these things. One of the prime essentials in any program we have," he went on, "is that we must revive county societies and get men to take an interest in what pertains to the profession as a whole." Dr. Bauer pointed out the relative importance of correct food, adequate housing and decent clothing in a general health program. He brought out the absurdity in trying to legislate a nation into health and urged education of the public and the doctors. "We must," he said, "impress every doctor in the United States with the necessity of getting out and putting his shoulder to the wheel on any program to make it a working realization."

Following Dr. Bauer's talk, representatives of various states were called on to report on problems or programs in their states.

The Returning Veteran and the A. M. A.—Dr. Lull presented the problems of the doctors returning from military service and the efforts of the American Medical Association in assisting them in their return to practice. "As you know," said Dr. Lull, "The American Medical Association saw fit to establish a Bureau of Information. This bureau was to furnish the returning medical service man with places where he could go to practice and information about residencies and internships, and where there were chances of postgraduate education. In Chicago for a time we interviewed ten to thirty veterans a day. This isn't the proper level to furnish these men this information. It is all right for general overall information, but the county and the state level should give this information."

He went on to say ". . . the returning service man is faced with many problems. Problems differ in various parts of the country. We have circularized various states and we find that problems are different and that each state will do different things."

Dr. Lull also spoke of the personal problems of returnees, of a place to live, of office space, of clothing. On these problems the veteran will need the help of local medical men. "For their problems," he said, "there are two places they hold blamable. One thing, however, that is of great importance to returning service man is that he wants to talk over his future with some one he can trust and some one who can give advice. Many state secretaries have done a fine job in this. The personal approach to these men makes them feel they are part of the profession."

The Washington Front.—Dr. Joseph S. Lawrence introduced his subject with the question most often asked of him, "What is happening in Washington." He then gave a report of the service the Washington office has rendered to Congressmen.

Brief analyses were made of a number of bills, with comments as to various groups supporting or opposing them. "We recognize," he said, "that in certain areas of the United States medical services may not be readily available, and we are endorsing the most logical method of overcoming that defect that has presented itself, namely the enactment of the Hill-Burton hospital construction bill; and, by the way, this bill has passed the Senate and is now before the House Committee on Interstate Commerce. Hospitals are naturally the center of medical activities, and it is hoped that the establishment of hospitals in areas where physicians are too few will attract more physicians and other medical personnel. For the success of this program there must be disengaged physicians willing to locate in the vicinity of the hospital, and the people of the community must give it their full support. . . ."

"One wonders," he continued, "why the bill does not apply itself more directly to the economics of the problem rather than to the professional phase. Under the New Zealand plan the government does not propose to provide medical care but rather to aid the citizen pay his bill. By agreement with the physicians, a national fee schedule was adopted including every type of service. The government agrees to refund to the patient the amount of every medical charge as computed on the national fee schedule. The patient makes his private contract with the physician of his own selection and pays him more than the schedule from his own resources if he cares to do so."

The Hill-Burton Bill and the Hospital System.—Dr. Fritz Arestad gave a detailed analysis of this bill, which is supported by the hospital associations, Protestant and Catholic, and the American Medical Association. He divided the bill into four principal parts: (*a*) purposes, (*b*) surveys and planning, (*c*) construction of hospitals and related facilities and (*d*) a section of miscellaneous items. He explained the provisions of each part and interpreted their significance in terms of need.

Cooperative Community Relationships.—Dr. W. W. Bauer spoke on this subject and stressed the importance of carrying the point of view of the medical profession to governmental agencies and the many lay organizations not only in the field of health but also those we do not ordinarily think of as health agencies, such as the American Camping Organization, Parents and Teachers Associations and Federated Women's Groups.

"One of the things constantly brought to my attention," said Dr. Bauer, "is that the American people are tremendously fond of doctors as individuals but not of medicine in organized aspects. People who have great confidence in their own physicians are rather antagonistic to county societies. We have not as a profession taken even time in the past to counteract the influence of our enemies by developing in the community those natural positions which should be ours."

Dr. Bauer emphasized the importance of leadership by the local medical society in community health matters and went on to say "All over the country there are being organized community health councils from informal groups of people getting

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together without much organization to health councils we find in greater cities where they have a considerable headquarters staff. These councils usually have some representation from the county medical society. It seems to me of great importance that where such councils do not exist they should be formed on the suggestion of the county medical society."

Dr. Bauer commented on the inadequacy of the present school health programs and pointed out that this should be one of the principal objectives of attack in the immediate future.

Dr. Oliver T. Stringfield of Stamford, Conn., one of the regional chairmen of the American Academy of Pediatrics, read a resolution of the American Academy of Pediatrics adopted at its annual session in Detroit, Jan. 15 to 18, 1946. Dr. Reginald Fitz, president of the Massachusetts Medical Society, discussed various aspects of the Hill-Burton bill. Dr. Walter Phippen of Salem, Mass., gave an account of the activities along this line in Massachusetts.

The Job of the State and County Societies in Medical Public Relations.—Dr. C. Charles Burlingame gave an extremely interesting discussion on the subject of Medical Public Relations. "Public relations," he said, "is a field with which doctors are relatively unfamiliar, but the time has come now that we must unite in a solid front, standing up for our own principles to maintain our dignity and ethical standards and to preserve the individual independence which we value so highly.

". . . Unless the doctors themselves are acutely aware of the principles and beliefs of organized medicine, we are bound to lose ground to selfish groups."

He described the subject of public relations under the headings "(*a*) individual personal contact, (*b*) contact with cohesive groups, i. e. from the speakers' platform and participation in civic affairs, (*c*) the printed word, i. e. newspapers, magazines, pamphlets and books, and (*d*) the radio." Summing up his talk, Dr. Burlingame spoke of the efforts in Connecticut calling on some of his personal experiences for descriptive material.

Medical Legislation

STATE LEGISLATION

Massachusetts

Bills Introduced.—H. 1822 proposes that any applicant for a license to practice a profession who has served in the armed forces of the United States during World War II shall be subject only to educational and experience qualifications required prior to Sept. 16, 1940.

Bills Passed.—H. 1749 passed the senate April 25. It proposes that the College of Physicians and Surgeons, a Massachusetts corporation duly organized and established in 1880, be dissolved and that it register no new students after the date this proposal may be enacted. H. 1811 passed the house April 25 and the senate May 1. It proposes that any official report of a medical examiner made and filed as required by law shall be open to the inspection of the next of kin of the deceased, his attorney or agent, and copies thereof may be made by such person.

New York

Bill Enacted.—A. 2274 has become chapter 999 of the Laws of 1946. It amends the public health law by creating provisions governing the furnishing of care and treatment to persons suffering from tuberculosis as well as diagnoses, tests, studies and analyses for the discovery of tuberculosis without cost or charge to any resident of the state who is suffering from tuberculosis or is suspected of having tuberculosis.

Rhode Island

Bill Enacted.—H. 1015 was approved April 12. It is a joint resolution resolving, among other things, that the senators and representatives from Rhode Island in the Congress of the United States be requested to use every effort at their command to work for federal participation in medical care payments paid directly by the state agency to hospitals, physicians or other practitioners until such time as a medical insurance program has been provided.

Coming Medical Meetings

American Medical Association, San Francisco, July 1-5. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Tuberculosis Physicians, San Francisco, June 30. Dr. Oscar S. Levin, P. O. Box 7011, Denver 6, Colo., Secretary.

American Association for the Study of Goiter, Chicago, June 20-23. Dr. Thomas C. Davison, 478 Peachtree St., N.E., Atlanta 3, Ga., Secretary.

American Association for the Surgery of Trauma, San Antonio, Texas, June 26-28. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association for Thoracic Surgery, Detroit, May 29-31. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis 15, Tenn., Secretary.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 20-22. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland 6, Secretary.

American Association of Plastic Surgeons, Toronto, Canada, June 3-4. Dr. Frederick A. Figi, 102 Second Ave., S.W., Rochester, Minn., Secretary.

American Association of the History of Medicine, Atlantic City, May 26-27. Mr. W. B. McDaniel II, 19 S. 22d St., Philadelphia 3, Secretary.

American Broncho-Esophagological Association, Chicago, May 31. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago 11, Secretary.

American College of Allergists, San Francisco, June 28-30. Dr. Fred W. Wittich, 401 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American College of Chest Physicians, San Francisco, June 27-30. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

American College of Physicians, Philadelphia, May 13-17. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

American College of Radiology, San Francisco, June 29. Mr. Mac F. Cahal, 20 N. Wacker Drive, Chicago 6, Secretary.

American Dermatological Association, Hot Springs, Va., June 10-14. Dr. Harry R. Foerster, 208 E. Wisconsin Ave., Milwaukee, Secretary.

American Federation for Clinical Research, Atlantic City, May 28. Dr. Richard H. Lyons, University Hospital, Ann Arbor, Mich., Secretary.

American Gastro-Enterological Association, Atlantic City, May 24-25. Dr. J. Arnold Bargen, 102 Second Ave., S. W., Rochester, Minn., Secretary.

American Laryngological Association, Chicago, May 29-30. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis 8, Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, May 27-28. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, New York, Secretary.

American Medical Women's Association, San Francisco, June 29-30. Dr. Beulah Cushman, 25 E. Washington St., Chicago, Secretary.

American Neurological Association, San Francisco, June 26-28. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.

American Ophthalmological Society, San Francisco, June 26-28. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Orthopedic Association, Hot Springs, Va., June 27-29. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit 2, Secretary.

American Otological Society, Chicago, May 31-June 1. Dr. Gordon D. Hoople, 713 E. Genesee St., Syracuse, N. Y., Secretary.

American Proctologic Society, San Francisco, June 30. Dr. Harry E. Bacon, 2031 Locust St., Philadelphia 3, Secretary.

American Psychiatric Association, Chicago, May 27-30. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington 20, D. C., Secretary.

American Radium Society, San Francisco, June 28-29. Dr. Edward H. Skinner, 1103 Grand Ave., Kansas City 6, Mo., Secretary.

American Rheumatism Association, New York, May 24-25. Dr. Richard H. Freyberg, 321 E. 42d St., New York 17, Acting Secretary.

American Society for Clinical Investigation, Atlantic City, May 27, Dr. Eugene A. Stead Jr., Grady Hospital, Atlanta 3, Ga., Secretary.

American Society of Clinical Pathologists, San Francisco, June 27-30. Dr. A. S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

Association for the Study of Internal Secretions, San Francisco, June 28-29. Dr. Henry H. Turner, 1200 N. Walter St., Oklahoma City, Secretary.

Association of American Physicians, Atlantic City, May 28-29. Dr. Joseph T. Wearn, 2065 Adelbert Road, Cleveland 6, Secretary.

Idaho State Medical Association, Boise, June 17-20. Dr. F. B. Jeppesen, 105 N. 8th St., Boise, Secretary.

Illinois State Medical Society, Chicago, May 14-16. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

Maine Medical Association, Poland Spring, June 23-25. Dr. Frederick R. Carter, 142 High Street, Portland 3, Secretary.

Massachusetts Medical Society, Boston, May 21-23. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Minnesota State Medical Association, St. Paul, May 20-22. Dr. B. B. Sooster, Lowry Medical Arts Bldg., St. Paul 2, Secretary.

Mississippi State Medical Association, Jackson, May 14-15. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.

National Tuberculosis Association, Buffalo, N. Y., June 11-13. Dr. Charles J. Hatfield, 1790 Broadway, New York 19, Secretary.

New Hampshire Medical Society, Manchester, May 14. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.

New Jersey Medical Society of, Atlantic City, May 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Cohenour, 221 W. Central Ave., Albuquerque, Secretary.

North Dakota State Medical Association, Bismarck, May 26-28. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.

Rhode Island Medical Society, Providence, May 15-16. Dr. William P. Buffum, 122 Waterman St., Providence 6, Secretary.

Society of American Bacteriologists, Detroit, May 21-24. Dr. Leland W. Parr, 1335 H St., N. W., Washington 5, D. C., Secretary.

South Dakota State Medical Association, Aberdeen, June 1-4. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

West Virginia Medical Association, Huntington, May 13-15. Mr. Charles Lively, P. O. Box 1031, Charleston 24, Executive Secretary.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CONNECTICUT

George Darling Named Director of Medical Affairs.—George B. Darling, Dr.P.H., vice chairman, division of medical science, National Research Council, Washington, D. C., has been appointed director of medical affairs, a newly created position at Yale University. Dr. Darling, who will assume his new post by July 1, will correlate the university interests represented in the schools of nursing and medicine, the department of public health and the Grace-New Haven Community Hospital. Dr. Darling graduated at the Massachusetts Institute of Technology in 1927 and received his degree of doctor of public health in 1931 at the University of Michigan. In 1932 he joined the staff of the W. K. Kellogg Foundation, subsequently holding various positions until he became president in 1940. He was vice chairman of the division of medical sciences of the National Research Council from 1942 to 1945, when he was named to the newly created post of executive secretary in the council.

ILLINOIS

Public Health Association.—The sixth conference of the Illinois Public Health Association will be held at the Hotel LaSalle, Chicago, May 16-17. Howard J. Shaughnessy, Ph.D., Chicago, president-elect of the society, who became acting president on the death of Dr. Sumner Miller, Peoria, will preside. Among the speakers will be:

Dr. Gaylord W. Anderson, Minneapolis, Military Preventive Medicine Experience Applicable to Civilian Public Health.
Dr. Roy R. Grinker, Chicago, Postwar Psychiatric Problems of Veterans and Civilians.
Dr. Dale C. Cameron, Washington, D. C., Psychiatric Plans of the U. S. Public Health Service.
Paul Fox, Chicago, Relation of Community Facilities Report to Planning.
Lieut. Col. Robert H. Flinn, Chicago, and Col. Ralph E. Tarbett, Washington, D. C., Recent Observations in Japan.
Dr. Richard F. Boyd, Springfield, Functions and Responsibilities of Local Health Agencies.
Dr. Raymond B. Allen, Chicago, The Challenge of Unmet Health Needs to Medical Education.
Dr. M. Herbert Barker, Chicago, Infectious Hepatitis.

The Associated Illinois Milk Sanitarians will meet May 17.

State Medical Meeting.—The 106th meeting of the Illinois State Medical Society will be held at the Palmer House, Chicago, May 14-16, under the presidency of Dr. Everett P. Coleman, Canton. Among the speakers will be:

Dr. Arthur S. Webb, Glen Ellyn, Minimal Pulmonary Infiltration: Significance and Management.
Dr. Paul H. Holinger, Chicago, Bronchoscopy as an Aid in the Diagnosis of Pulmonary Disease.
Dr. Henry C. Sweany, Chicago, New Laboratory Methods in Diagnosis of Tuberculosis.
Dr. Emmet F. Pearson, Springfield, Observations on Malnutrition in Santo Tomas Internment Camp.
Dr. H. Russell Meyers, Iowa City, Management of Acute Craniocerebral Trauma.
Dr. Israel Davidsohn, Chicago, Rh Factor.
Dr. Eleanor M. Humphreys, Chicago, Pathology of Rheumatic Fever.
Dr. Harry A. Warren, Peoria, Treatment of Acute Rheumatic Fever in Young Adults.
Dr. Parker Dooley, Chicago, Diarrhea in Infancy.
Dr. George E. Wakerlin, Chicago, Physiology of Infectious Diseases of the Liver.
Dr. George F. O'Brien, Chicago, Newer Aspects in the Treatment of Liver Diseases.
Dr. Russell D. Herrold, Chicago, Indications for Antibiotics (Penicillin and Streptomycin) in Urinary Tract Infections.
Dr. Francis J. Gerty, Chicago, Practical Points in Shock Therapy.
Dr. Frank G. Norbury, Jacksonville, Hazards in the Use of Sedatives: Bromide Intoxication.
Dr. Walter W. Carroll, Chicago, Venous Surgery.
Dr. Augusta Webster, Chicago, Periodic Examination in Apparently Well Women.
Dr. James E. Fitzgerald, Chicago, Anesthesia in Obstetrics.
Dr. Alexander Brunschwig, Chicago, Cancer of the Pancreas.
Dr. Danely P. Slaughter, Chicago, Diagnosis of Accessible Cancer.
Dr. Warren H. Cole, Chicago, Diagnosis and Treatment of Cancer of the Colon.
Dr. William E. Anspach, Chicago, Staphylococcic Pneumonia in Children.
Drs. Hilman S. Schmidt and Theodore Warchowski, Chicago, Fluoroscopic Study of the Nasal Accessory Sinuses Compared with X-Ray Film Examination.
Dr. Irvin F. Hummon Jr., Chicago, The Expression of Dosage in X-Ray and Radium Therapy.
Dr. Henry Quastler, Urbana, Expected Uses of the Betatron in Cancer Therapy.
Dr. Paul Carelli, Chicago, Relation of Near Point Convergence to Squint Surgery.
Drs. Watson Gailey and George E. Morgan, Bloomington, The Surgical Management of Squints.
Dr. Hyman S. Sugar, Detroit, and Harvey J. Forestner, D.D.S., Chicago, Methacrylic Resin Implant for Sunken Upper Lid Following Enucleation.
Dr. Helen Holt, Chicago, Ocular Observations in Deficient Diets.
Dr. Samuel J. Myer, Chicago, Diagnosis and Treatment of Blepharoptosis.
Dr. Edmund B. Spaeth, Philadelphia, The Marcus-Gunn Jaw Phenomena.
Dr. Thomas D. Allen, Chicago, Pan American Ophthalmological Congress in Montevideo.
Charles F. Hottes, Ph.D., Champaign, Open Boat Trip Down the San Juan and Colorado Rivers.
Dr. Oscar B. Nugent, Chicago, Cataract Extraction by the Vacuum Method.
Dr. Kenneth L. Roper, Chicago, Lancaster's Technic of Cataract Extraction.
Dr. George E. Shambaugh Jr., Chicago, Preliminary Results with a New Fenestration Technic.
Dr. Francis L. Lederer, Chicago, The Otologist's Role in Rehabilitation of the Hard of Hearing Adult.
Dr. Maurice H. Cottle, Chicago, Rhinoplasty.
Dr. Bertha A. Klien, Chicago, The Eyegrounds in the Differential Diagnosis of Arterial Hypertension.

The oration in medicine will be given Tuesday evening by Dr. Ralph H. Major, Kansas City, Mo., on "War and Disease" and the oration in surgery Wednesday morning by Dr. Robert L. Sanders, Memphis, Tenn., on "Gallbladder and Common Duct Problems." At the dinner Wednesday evening the principal speaker will be William M. McGovern, Ph.D., Chicago, on "Behind the Scenes in Foreign Affairs."

Chicago

Society News.—Major Gen. George F. Lull, Secretary and General Manager, American Medical Association, will address the Chicago Society of Internal Medicine, May 20, on "Utilization of Specialists in the Army."

Olin West Made Honorary Member.—Dr. Olin West, recently retired Secretary and General Manager of the American Medical Association, was elected an honorary member of the Connecticut State Medical Society during its annual meeting May 1.

Fund for Research in Pediatrics.—The woman's board of Presbyterian Hospital has contributed $6,000 to establish a fund for research in pediatrics in memory of James Lovett Parmelee, first lieutenant in the Marine Air Corps, who was lost in action over Rabaul, New Britain, on April 30, 1944. Lieutenant Parmelee was the son of Dr. and Mrs. Arthur H. Parmelee, Oak Park, Ill.

New Mercy Hospital.—Mercy Hospital-Loyola University Clinics has purchased all but 100 feet of the block bounded by Erie, Huron and St. Clair streets and Fairbanks Court to construct a 500 bed hospital to cost at least $5,000,000, it is reported. The present Mercy Hospital, 26th Street and Prairie Avenue, will still be maintained by the Sisters of Mercy after completion of the new near north side hospital in 1950. Construction of the new building will be started in 1948. The new structure will be the third hospital located in an area of less than two blocks and will adjoin the proposed new medical center of Northwestern University (THE JOURNAL, April 20, p. 1181). Mercy Hospital is the oldest hospital in the Chicago area. From 1850 to 1859 it was a part of Rush Medical College and later it became affiliated with Northwestern University with the affiliation continuing until 1920, when Mercy became associated with Loyola University.

Irwin Winter Appointed Director of Clinical Research. Dr. Irwin C. Winter, a major in the Army Medical Corps until his separation from the service in March, has been appointed director of clinical research for G. D. Searle and Company, Chicago manufacturers of pharmaceuticals. Dr. Winter will work directly with Albert L. Raymond, Ph.D., vice president in charge of research, in the clinical development of the products of Searle research. Dr. Winter entered military service in 1942 as first lieutenant in the medical corps after serving for a number of years as medical consultant for the Council on Pharmacy and Chemistry of the American Medical Association. Previous to his connection with the American Medical Association he was associate professor of pharmacology at the University of Oklahoma School of Medicine and instructor in physiology and pharmacology at the Baylor University School of Medicine. He received his M.D. degree from the University of Tennessee College of Medicine, Memphis, and his M.S. and Ph.D. degrees in physiologic chemistry from Northwestern University. In the medical corps Dr. Winter graduated from the School of Aviation Medicine at Randolph Field, Texas, in 1944 and went overseas as flight surgeon for the European division of the Air Transport Command, seeing action in England, France, Germany and Czechoslovakia. Most of Dr. Winter's research has been in the fields of fatty acid metabolism, the pharmacology of autonomic drugs and the physiology of the urinary tract.

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KANSAS

Dr. Hiebert Leaves Board of Health.—Dr. Homer L. Hiebert, Topeka, director of the division of tuberculosis control, Kansas State Board of Health, since March 1942, resigned in March to take graduate work in radiology at Harper Hospital, Detroit.

KENTUCKY

Personal.—Dr. Charles E. Youmans, Frankfort, has been appointed superintendent of Darnall General Hospital, Danville, recently reacquired for state control. Dr. Youmans is said to have been associated with the state department of welfare for some twenty-two years and is currently superintendent of the State Institution for the Feebleminded, Frankfort.——Dr. and Mrs. D. Randolph Skaggs, Royalton, on March 3 observed their fiftieth wedding anniversary.——Dr. Edward C. Humphrey, Harrodsburg, was recently named physician of the University of Kentucky health service to succeed Dr. Robert J. Griffin, Lexington, who resigned to enter private practice.——Dr. Clement V. Hiestand, Campbellsville, recently completed fifty years in the practice of medicine, twenty-five of which were spent as health officer of Taylor County. Dr. Hiestand once served as mayor of Campbellsville and secretary of the Taylor County Medical Society.

LOUISIANA

Personal.—Dr. Murphy P. Martin, St. Martinville, was recently appointed health unit doctor for Iberia Parish and also to act as health officer for St. Martin Parish. Dr. Martin will reside in St. Martinville until he can secure a home in New Iberia.

Dr. Magruder Resigns After Thirty-One Years' Service.—Dr. Marcus J. Magruder, New Orleans, has resigned from the board of administrators of the Tulane Educational Fund after serving as an administrator for thirty-one years. He was appointed to the medical advisory committee of the board in 1914, becoming chairman in 1924, a position he held at the time of his resignation.

Doctor's Day.—March 30 was observed as Doctor's Day in New Orleans. According to the *Bulletin* of the Orleans Parish Medical Society this date was designated in March 1938 for the observance because of the fact that on March 30, 1888 Dr. Rudolph Matas performed his first operation in vascular surgery. Dr. Matas is emeritus professor of surgery at Tulane University of Louisiana School of Medicine, New Orleans.

MASSACHUSETTS

Personal.—Dr. Joseph W. Ferrebee has been appointed assistant professor of medicine at Harvard Medical School, Boston, and Peter Bent Brigham Hospital, where, in addition to his clinical teaching, he will head a program of research in fundamental aspects of the mechanism of hypersensitivity.

The George Holmes Lecture.—The George W. Holmes annual lecture will be delivered by Dr. Arthur C. Christie, Washington, D. C., May 17, before the annual meeting of the New England Roentgen Ray Society at the Harvard Club, Boston. Dr. Christie's subject will be "The First Fifty Years of Radiology: The Elements Which Have Contributed to Its Growth as a Great Medical Specialty."

Personnel Changes in State Health Department.—Dr. John J. Poutas, Boston, has resumed his position as director of the division of local health administration in the Massachusetts Department of Public Health, having returned from overseas duty in the European theater. His work will include supervision of the eight district offices of the department and the nursing, nutrition, social service and sanitation bureaus. Dr. Roy F. Feemster, Boston, recently acting director of the division of local health administration, Massachusetts Department of Public Health, has returned to his former position as director of the division of communicable disease. Dwight J. Mulford, Ph.D., has been appointed laboratory chief of the blood processing laboratory in the division of biologic laboratories, Massachusetts Department of Public Health. This laboratory is especially designed for the fractionation of blood plasma into albumin, immune serum globulin, fibrin foam, fibrin film and other fractions of value in medicine, surgery and public health. Dr. Otto C. Yens, Cambridge, has been appointed supervisor in charge of crippled children services in the Massachusetts Department of Public Health. Prior to his appointment Dr. Yens held the rank of lieutenant colonel in the medical service of the 117th Evacuation Hospital, U. S. Army. Ruth Alida Thomas, C.P.H., has joined the staff of the bureau of health information, Massachusetts Department of Public Health. Miss Thomas was formerly assistant professor in the department of hygiene and bacteriology, Smith College. Alexander A. Robertson, formerly chief sanitary officer with the Newton Health Department, is now serving with the Massachusetts Department of Public Health as supervising health district sanitary officer. Mr. John B. Skinner has been appointed director of the division of occupational hygiene of the Massachusetts Department of Labor and Industries. Mr. Skinner has been an engineer with the department since 1941. He succeeds Mr. Manfred Bowditch, who retired from state service to assume the position of field director of the Saranac Laboratory, Saranac Lake, N. Y.

NEW HAMPSHIRE

State Medical Meeting.—The one hundred and fifty-fifth meeting of the New Hampshire Medical Society will be held at the Hotel Carpenter, Manchester, May 14, under the presidency of Dr. Richard W. Robinson, Laconia. Among the speakers will be:

Dr. Ralph E. Miller, Hanover, Autopsy Service, Mary Hitchcock Hospital.
Dr. Edwin B. Astwood, Boston, Present Status of the Medical Treatment of Thyrotoxicosis.
Dr. Louis H. Bauer, Hempstead, N. Y., The Medical Care Problem in the United States.
Dr. John C. Leonard, Boston, Hypertension.
Dr. Clay R. Murray, New York, Handling of Common Injuries to the Knee Joint.
Dr. John T. King, Baltimore, Acute Chest Episodes Caused by Pulmonary Embolism: Differential Diagnosis and Treatment.
Dr. Edward D. Churchill, Boston, Resuscitation of the Wounded.

Fifty year certificates will be presented to Drs. H. Sheridan Baketel, Greenland, and Oscar C. Young, Charlestown. Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will address the banquet Tuesday evening on "Medicine in the Postwar World."

NEW JERSEY

One Hundred Years of Medicine.—The Camden County Medical Society will celebrate its one hundredth anniversary on August 14. On this date in 1846 it was formed at Haddonfield under the name of the District Medical Society for the County of Camden in the State of New Jersey with Drs. James S. Risley as president, O. H. Taylor vice president, R. M. Cooper secretary and Jacob P. Thornton treasurer. The organization of the society had been approved at a meeting of the Medical Society of New Jersey on May 12, 1846. The state society was founded in 1766. Organizers of the county medical society include Dr. Risley, Dr. Thornton and Dr. C. D. Henry.

NEW YORK

The Borden Undergraduate Award.—Dr. William A. Clay, Washington, D. C., was recently presented with the Borden Undergraduate Research Award at the University of Rochester School of Medicine and Dentistry for his work with Dr. Sidney C. Madden, Rochester, on protein metabolism and protein reserves during acute sterile inflammation. The annual award of $500 for excellence of research has been established at twenty-two medical schools in the country in an effort to assist the schools in developing a greater interest among undergraduates in medical research (THE JOURNAL, Dec. 18, 1945, p. 1218).

Stockton Kimball Named Dean of Buffalo.—Dr. Stockton Kimball, a member of the faculty of the University of Buffalo School of Medicine for a number of years, has been appointed dean of the medical school to succeed Dr. Edward W. Koch, who died February 9 after serving as dean for sixteen years. Dr. Kimball graduated at Buffalo in 1929. He was appointed instructor in medicine and pharmacology in 1932, subsequently was promoted to associate in those two fields and in July 1944 was elevated to assistant dean. He also is an instructor in the school of social work. Since Dr. Koch's death he has been acting dean.

Committee for Education on Alcoholism.—The Rochester Committee for Education on Alcoholism was organized April 15 and is said to be the tenth such group to be set up in the United States. Dr. John L. Norris, Rochester, is chairman. Mrs. Marty Mann, executive director of the National Committee for Education on Alcoholism, addressed the organization meeting. Objectives of the group include:

Education of the community to an understanding of the problem that alcoholism is a disease and the alcoholic addict is a sick person; that the alcoholic addict can be helped and is worth helping, and that alcoholism is a public health problem and therefore a public responsibility.
Promotion of adequate hospital facilities for the treatment of acute alcoholism.
Establishment of an information center working in cooperation with Alcoholics Anonymous.
Establishment of a clinic for the study of alcoholism and for the diagnosis and treatment of alcoholic addicts.

State to Offer Cerebral Palsy Aid.—Under a recently enacted resolution a legislative committee has been formed to make a survey and study of the social, educational and physical problems of persons afflicted with cerebral palsy in the state of New York. The membership of the committee is to consist of the commissioner of health, commissioner of social welfare, commissioner of mental hygiene, three members to be appointed by the temporary president of the senate and three members to be appointed by the speaker of the assembly. These appointments had not been made up to April 15 and probably will not be made for another month. The resolution, which was introduced by Mr. Abraham Schulman, appropriates $20,000 for the study of cerebral palsy in the young. It was passed by the senate and the assembly and became a law in the form of a resolution which did not require the governor's signature.

New York City

Harvey Society Lecture.—The eighth Harvey Society Lecture will be delivered at the New York Academy of Medicine, May 16, by Dr. Carl F. Cori, professor of pharmacology, Washington University School of Medicine, St. Louis, on "Enzymatic Reactions in Carbohydrate Metabolism."

Training in Psychoanalytic Medicine.—The Psychoanalytic Clinic for Training and Research, department of psychiatry, Columbia University, offers to qualified physicians a three year course of graduate residency training in psychoanalytic medicine. This course is based on complete training in psychoanalysis, includes psychosomatics and is combined with the graduate training in the other branches of psychiatry. On fulfilment of the training requirements, students will be awarded a certificate of training in psychoanalytic medicine. Those students who in addition undertake satisfactory investigative work and pass a supplementary examination in the related basic sciences may also be awarded the advanced degree of doctor of medical science. The next first year class begins October 1.

Memorial Planned for Mills Sturtevant.—On April 16 thirty-five friends and associates of the late Dr. Mills Sturtevant, who founded the gastroenterology clinic of New York University College of Medicine in 1926, decided to raise $100,000 to build, equip and endow a new stomach clinic in his memory. The new clinic will be part of the New York University-Bellevue Medical Center (THE JOURNAL, Dec. 29, 1945, p. 1277). Dr. Arthur M. Wright, former chairman of the department of surgery at the New York University College of Medicine, is general chairman of the campaign, and Dr. Max P. Cowett, an associate of Dr. Sturtevant at the time the clinic was established, vice chairman. Dr. Sturtevant was on the university medical staff from 1913 until his death in 1945 and chief of the gastroenterology clinic until 1938.

NORTH CAROLINA

Students Receive Prizes.—The Borden Undergraduate Research Award in medicine for 1946 was recently presented to Dr. Thomas H. Lewis for his study in comparative anatomy entitled "The Morphology of the Pectoral Girdle and Anterior Limb in Aplodontia." Honorable mention was given to Dr. Alexander W. Boone Jr. for his contribution in experimental surgery entitled "A Study of the Effect of Pericardial Adhesions and Coronary Ligation in the Rat." The annual award of $500 for excellence of research has been established at twenty-two medical schools in the country in an effort to assist the schools in developing a greater interest among undergraduates in medical research. The Mead Johnson prize in pediatrics was given to Dr. Bailey D. Webb for her contribution entitled "A Study of Purpura and Gangrene Following Scarlet Fever."

Gifts to Bowman Gray.—The Bowman Gray School of Medicine, Winston-Salem, has received gifts of $125,000 each from Gordon and Bowman Gray, sons of the late Bowman Gray, whose contribution in 1939 made possible the expansion of the Wake Forest School of Medical Sciences into a four year school. The gift came from the estate of the late Mr. Gray, a tobacco magnate of Winston-Salem (THE JOURNAL, Nov. 8, 1941, p. 1635). The recent contributions are to be used for expansion of the medical school, enlargement of the ophthalmology department in connection with the clinic for eye diseases now sponsored by the Lions Club, addition of a new staff member to or training a present staff member for the department of physical medicine, enlargement of the orthopedic department and addition to the staff in neurology. As a result of the $250,000 received from the Gray brothers, a department of preventive medicine has been organized, and Dr. Thomas T. Mackie, New York, has been elected professor of preventive medicine and chairman of the division of medicine.

OHIO

Revised Regulations Govern Tuberculosis Hospitals.—A revised code of regulations governing tuberculosis hospitals, adopted by the Ohio Public Health Council on January 13, became effective February 15. The revised code defines a tuberculosis hospital, outlines the experience required for a medical superintendent and governs the care of patients, laboratory procedures, nursing service and the health supervision of nurses and other employees.

Research in Mental Hygiene.—The Ohio State Board of Control has made available to the state division of mental hygiene $25,000 for research in the field of mental diseases. The money will be divided among several research projects designed to investigate mental health problems from the biologic, medical and sociological points of view. Dr. Edward J. Humphreys, chief, bureau of prevention and education, division of mental hygiene, will direct and coordinate the research work.

Personal.—Staff members of St. Elizabeth Hospital recently honored Dr. Frederick J. Driscoll, Dayton, with a dinner and presented him with a wrist watch in recognition of his twenty-five years' service on the staff. Dr. Driscoll is moving to Fort Lauderdale, Fla.——Dr. William Muhlberg, medical director of the Union Central Life Insurance Company, Cincinnati, since 1916 and vice president since 1929, retired recently. He will be succeeded by Dr. Charles Maertz, assistant medical director. Dr. Muhlberg is president of the Cincinnati Board of Health and a past president of the Public Health Federation and of the Life Insurance Medical Directors of America.——Dr. James T. Villani, Akron, has been appointed superintendent of the Edwin Shaw Sanatorium (Summit County Tuberculosis Hospital).——Dr. Theodore A. Cross, Medina, has been appointed coroner of Medina County to succeed Dr. Robert T. Rowe, Akron, resigned.

PENNSYLVANIA

Personal.—Dr. Andrew J. Griest, Steelton, was recently made president-elect of the Harrisburg Academy of Medicine. Dr. William K. McBride, Harrisburg, was installed as president. Dr. Edward A. Nicodemus, Harrisburg, is secretary-treasurer.——Dr. Dale C. Stahle, Harrisburg, recently released from the armed services, has been named acting director of the bureau of tuberculosis control, state department of health. Dr. Stahle was formerly in charge of the department division of pneumonia control.

Jefferson Acquires Sanatorium.—Jefferson Medical College of Philadelphia in connection with expansion plans is acquiring the White Haven Sanatorium in Luzerne County, according to the *Bulletin* of the Pennsylvania Tuberculosis Society. Harold T. Prentzel, business manager of the Friends Hospital, Philadelphia, will continue as administrator of White Haven, a position he took over in March 1942. White Haven was started in 1895 as the Free Hospital for Poor Consumptives by the late Dr. Lawrence F. Flick, who was instrumental in founding the Henry Phipps Institute of the University of Pennsylvania, Rush Hospital for Consumption and Allied Diseases, Philadelphia, and the Pennsylvania Society for the Prevention of Tuberculosis. The institution comprises forty-five buildings with assets valued at $1,097,919, including $179,255.90 in restricted endowment funds. The Jefferson plans for expanding its facilities for the treatment and care of tuberculosis patients includes research. The college also desires to use the Broad Street Hospital, Philadelphia, as a chest clinic, but the proposal is held up by litigation, it was stated. Patients of the proposed clinic at the Broad Street Hospital would be cared for at White Haven Sanatorium. White Haven has 240 beds and Broad Street has 120. Dr. Frank A. Craig, Philadelphia, director of the clinic of the Phipps Institute and president of the White Haven Sanatorium, is reported to have said that the object of the board in affiliating with Jefferson Medical College was to provide a more valuable service to its patients. It will benefit the community as a whole by continuance of research in tuberculosis, begun many years ago at White Haven, by providing Jefferson with research material and by providing the sanatorium with the teaching facilities of a medical school for both physicians and nurses. The board of directors of the White Haven Sanatorium will remain intact.

Philadelphia

Appointments at Temple.—Dr. George C. Henny has been appointed professor of medical physics and head of the department of physics at Temple University School of Medicine and Hospital, and Dr. Margaret T. C. Collins, Philadelphia, has been named director of the laboratories and lecturer in endocrinology. Dr. Henny graduated at the University of Oregon Medical School, Portland, in 1930 and Dr. Collins at the University of Illinois College of Medicine in 1944.

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TEXAS

Texas Medical Center.—On February 28 a dinner in Houston marked the dedication of the 161 acre site of the Texas Medical Center, the first units of which are now under construction. Ultimately the project will cost $100,000,000. Development of the Texas Medical Center was made possible by the M. D. Anderson Foundation, the trustees of which decided to use the $20,000,000 fortune left by the late Mr. Anderson of Anderson, Clayton and Company for this purpose. To administer and promote the project the Texas Medical Center was incorporated Nov. 1, 1945 under the laws of the state of Texas "exclusively for benevolent, charitable and educational purposes." The specific purposes will be:

To promote and provide for or assist in the establishment, support and maintenance of facilities for medical, dental and nursing education and other phases of health and medical education, for hospitalization and treatment of the sick and afflicted, and for research in the field of health and science of medicine and dentistry.

To promote and provide for or assist in the establishment, support and maintenance of medical schools, dental schools, schools of public health and nursing, hospitals and clinics and to provide facilities and financing for housing of students, faculty members and employees of all and any of such institutions.

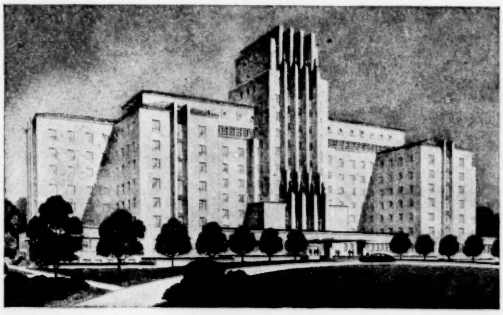
To promote, provide for or assist in the establishment, support and maintenance of a general health program for the state of Texas, as well as special health programs for the state of Texas.

To join and assist other institutions organized and operated exclusively for any one or more of the purposes herein stated.

To make awards, give prizes, grant scholarships, publish reports and engage in research.

To accept and administer gifts, donations and bequests, whether of money, personal property or real estate, and otherwise to accumulate, administer and disburse funds to advance or achieve any of the aforestated purposes.

The four colleges participating in the program of the Texas Medical Center will be Baylor University, which at this time is constructing a $2,000,000 school of medicine to be completed in December; the University of Texas, which has announced a $6,250,000 building program for the center; the University of Houston, which will administer the Central School of Nursing, and the Rice Institute, which will cooperate with the units of the center in research. A number of hospitals will be located immediately within the confines of the center: Hermann Hospital, which has received bids on a large addition to its present building in the center and on a professional building for doctors and dentists practicing in the center, with additional plans for an affiliated urologic hospital, a children's hospital in association with the Shrine Arabia Temple, a psychosomatic pavilion and a maternity pavilion; the M. D. Anderson Hospital for Cancer Research, jointly supported by the Anderson Foundation and the University of Texas in cooperation with the American Cancer Society; the Cancer hospital was made a state institution by the forty-seventh legislature, and in this institution unlimited clinical and fundamental research and treatment will be carried out in cooperation with the University Medical Branch, the main university, the dental school and other units of the center; the Methodist Hospital, for which plans for a new building to cost $3,500,000 are nearing completion, St. Luke's Episcopal Hospital, which will be constructed in the center at a cost estimated at $2,500,000, a tuberculosis hospital, to be constructed in the center as a large, modern institution to replace the present institution operated by the city of Houston and the county of Harris. The important addition of a marine hospital is expected to be announced for the center by the United States government in a few weeks. The United States Naval Hospital now under construction at a cost of $12,000,000 is only two blocks from the center and will cooperate in its program. Another government hospital to be located within walking distance of the center is the $8,000,000 Veterans Hospital. The Convalescent Hospital and the Hospital for Chronic Diseases and the Aged, for which plans are under discussion, and the Medical Center Central Clinic, which will be an important and integral part of the entire program, will bring the total number of beds to well over 2,500. Hospitals located elsewhere in the city of Houston, but which have made offers of close cooperation to the center board of trustees, will add an additional 1,700 beds to the grand total. Under the center's plan of operation each of these hospitals will participate fully in education and research. Each institution will maintain its separate identity and management, but in joining in the center program each commits itself to a unified teaching and research program. The units of the University of Texas will be the M. D. Anderson Hospital for Cancer Research and the School of Dentistry. Preceptorial training for undergraduate medical students, with all hospital facilities in the center available for students, with special assignments to a receiving center and outpatient department, a postgraduate and graduate school of medicine, a school of public health and training courses for all public health workers, and an institute of geographic medicine. Additional plans for the Texas Medical Center call for the establishment of an Institute of Biological and Pathological Research and the operation of a Central Medical and Diagnostic Clinic covering the admission, examination, diagnosis and distribution of all indigent patients who are admitted to the center. This clinic will house a central service and medical record bureau which will handle all phases of this program, making available to all medical students a wealth of material being wasted under present unorganized conditions. The Houston Academy of Medicine has made plans for a medical library in the center and in connection therewith will operate a training school for graduate librarians for certificate in individual medical library practice. In addition to a broad library program, the academy of medicine building will provide lecture and meeting rooms. Through cooperation of the Baruch Foundation for Physical Medicine, facilities may be provided in the Texas Medical Center for rehabilitation of postwar and industrial injuries. Dr. Ernest W. Bertner, Houston, is president of the self-perpetuating board of trustees of the Texas Medical Center; John H. Freeman, attorney and member of the Anderson Foundation, is vice president; Col. James Anderson is treasurer and Frederick C. Elliott, dean of the University of Texas Dental Branch, is secretary. Other members are Jesse H. Jones, Mrs. Oveta Culp Hobby, Col. W. B. Bates, also a member of the Anderson Foundation, Bishop Clinton S. Quin, Hines H. Baker, Ray L. Dudley, Leland Anderson, Horace M. Wilkins, also a member of the Anderson Foundation, and H. R. Cullen, philanthropist, whose gifts were largely responsible for the new buildings, which will house every hospital in the center.



Hermann Hospital—one unit in new medical center.

VIRGINIA

Personal.—Dr. Henry M. Snead, Petersburg, has been appointed coroner of Petersburg, succeeding Dr. Walter L. L. Barnes, resigned.

Changes in State Health Department.—Dr. Benjamin R. Allen, formerly of Suffolk, recently released from the army, was appointed director of the bureau of communicable diseases, Virginia Department of Health, Richmond, effective April 1. Dr. Edgar C. Harper, Richmond, director of tuberculosis outpatient service and the crippled children's bureau, resigned, effective May 1, to become assistant chief, tuberculosis control program, fourth district, Veterans Administration. Dr. Clifford E. Waller, Leesburg, health officer of Loudoun County, resigned, effective April 1.

Changes in Health Personnel.—Dr. Nelson Podolnick, Fairfax, resigned April 1 as health officer of Prince William, Fairfax and Stafford counties to enter private practice in Falls Church.——Dr. Edward M. Holmes Jr., Richmond, on terminal leave from service in the army, has returned to his former position as director of the division of venereal diseases, Virginia Department of Health. Dr. Holmes had held the position from September 1939 to June 1942, when he entered service.

WISCONSIN

Executive Assistant Named for State Society.—On March 18 Mr. Ralph F. Weber, Milwaukee, business manager of the Milwaukee County chapter, American Red Cross, joined the staff of the State Medical Society of Wisconsin as an executive assistant to aid in developing the society's health insurance programs, including "The Wisconsin Plan," the farm security program in Price and Taylor counties and other related projects. For ten years prior to his joining the Red Cross Mr. Weber had been assistant executive secretary of the Medical Society of Milwaukee County.

The Jackson Clinic Postgraduate Meeting.—The Jackson Clinic postgraduate meeting will be held in Madison May 16-17 with Dr. Karl A. Meyer, Chicago, as the guest speaker. The clinical interpretations of the basal metabolic rate and of laboratory tests will be discussed. The program will also include round table discussions. Among the speakers on the program will be:

Drs. Claude F. Schroeder, Princeton, and John A. Hurlbut, Madison, Demonstration of Allergy Tests. Significance of the Tests.
Dr. Addie M. Schwittay, Madison, The Rh Factor.
Dr. Donald L. Dickerson, Madison, Diagnosis and Treatment of Sterility.
Dr. Russell Jackson Jr., Madison, Diagnosis of Cancer of the Breast.
Dr. George H. Ewell, Madison, Lesions of the Genitourinary Tract.
Dr. Luther E. Holmgren, Madison, Treatment of Varicose Veins.
Dr. Arthur C. Stirling, Madison, Recent Developments in Orthopedics.
Dr. Arnold S. Jackson, Madison, Recent Developments in Surgery.
Dr. James A. Jackson, Madison, Cancer of the Colon.
Dr. Margaret J. Prouty, Madison, Recent Developments in Pediatrics.
Dr. Johanna Christine Thelen, Madison, Problems in Gynecology
Rachael Weirich, Problems in Dietetics.
Drs. Reginald H. Jackson Jr., Michael F. DeSalvo, John H. Dix and Elmer J. Hawkins, all of Madison, Case Presentations.

GENERAL

Neurologic Board Candidates Return to Prewar Status.—At a meeting in Nashville, April 1, the American Board of Neurological Surgery voted that in the future no candidate will be examined until he has complied with all requirements of the board both as to training and practice but invites prospective candidates to submit their qualifications to the board when their period of training is completed and before they have begun their period of practice. During the war, in order to cooperate with the surgeons general of the army and navy in the classification of specialists, the American Board of Neurological Surgery permitted applicants whose training was satisfactory to take their examination before complying with the requirement of two years' independent practice of neurologic surgery. In no instance, however, was the board's certificate issued until all requirements had been fulfilled.

Cancer Society Reorganized.—The American Cancer Society, which was reorganized early in 1945 (THE JOURNAL, April 28, 1945, p. 1141), has announced another reorganization to permit its operation by its constituents, thus allowing for a closer relationship by the parent body and the state groups. The organization adopted a new set of by-laws and will be henceforth "truly national in scope," it was reported. Corporation papers have been filed under the laws of New York, and the changes in the by-laws transform the board of directors from a group of random choice electees to a board of fifty-six members, half of whom are selected at large and the other half from the seven geographic regions comprising the society. Dr. Frank E. Adair, New York, was reelected president of the society and Theodore R. Gamble, chairman of the board of the American Theatre Association, Portland, Ore., chairman of the reorganized board of directors. He succeeds Eric A. Johnston, who was unable to accept reelection.

Ear, Nose, Throat Meeting.—The fiftieth meeting of the American Laryngological, Rhinological and Otological Society, Inc., will be held at the Drake Hotel, Chicago, May 27-28, under the presidency of Dr. Albert C. Furstenberg, Ann Arbor. Among the speakers will be:

Dr. Dean M. Lierle, Iowa City, The Use of Oral Penicillin in Otolaryngology.
Dr. Terence Cawthorne, London, England, Ménière's Disease.
Dr. James H. Maxwell, Ann Arbor, Chronic Proliferative Osteomyelitis of the Frontal Bone.
Joseph A. Sullivan, Toronto, Ontario, Canada, A Statistical Analysis of an Audiometric Survey in the Royal Canadian Air Forces.
Dr. Oliver E. Van Alyea, Chicago, Maxillary Sinus Drainage.
Dr. Murdock S. Equen, Atlanta, Magnetic Removal of Foreign Bodies from the Food and Air Passages.
Drs. Fred Z. Havens and John R. McDonald, both of Rochester, Minn., Pathologic Study of the Malignant Tumors of Glandular Origin of the Nose, Throat and Mouth.
Dr. Kenneth M. Day, Pittsburgh, Appraisal of the Fenestration Operation; Experiences with 100 Cases.
Dr. Chevalier L. Jackson, Philadelphia, Laryngocele.
Dr. Edmund P. Fowler Jr., New York, Pure Tone Group Audiometry.
Dr. Arthur W. Proetz, St. Louis, Nasal Physiology in Relation to the Common Cold.
Dr. Daniel S. Cunning, New York, Tonsillectomy and Poliomyelitis.

American Therapeutic Society.—The forty-seventh meeting of the American Therapeutic Society will be held at the Hotel Traymore, Atlantic City, May 11-12, under the presidency of Dr. Joseph F. Borg, St. Paul. Among the speakers will be:

Dr. Richard Kovacs, New York, The Present Status of American Spas.
Dr. Noah P. Norman, New York, Soils, Food and Health.
Dr. Oscar B. Hunter Jr., Washington, D. C., Correlation of Laboratory Findings with Therapy in Epidemic Hepatitis.
Drs. David I. Macht and Marcus Ostro, Baltimore, An Experimental Approach to the Therapy of Pemphigus.
Dr. Harvey B. Haag, Helen J. Ramsey, Ph.D., and N. W. Pinschmidt, all of Richmond, Va., Alcohol-Barbiturate Synergism.
Dr. Daniel L. Sexton, St. Louis, Thiouracil—Clinical Evaluation Following Two and One Half Years' Experience.
Dr. Frank W. Konzelmann, Atlantic City, Clinical Significance of the Rh Factor as of Today.
Drs. Ernest A. Spiegel, Mona Spiegel-Adolf and Henry T. Wycis, Philadelphia, Recent Studies in Cerebral Trauma.
Drs. Harry E. Bacon, Philadelphia, and Samuel A. Linde, Washington, D. C., The Surgical Treatment of Diverticulitis.
Dr. Kenneth M. Lewis, New York, The Use of Penicillin in Surgical Infection.
Dr. Robert E. Fricke, Rochester, Minn., Uses of Radon Ointment.
Dr. Francis M. Pottenger, Monrovia, Calif., Difficulties in Physical Examination of the Chest.
Dr. David Salkin, Hopemont, W. Va., Postmortem Pneumothorax.
Raymoud A. Kelser, D.V.M., Philadelphia, Brucellosis in Man and Animals.
Dr. Nathan S. Davis III, Chicago, The Treatment of Hypertensive Cardiovascular Renal Disease with Ascorbic Acid, Riboflavin and Vitamin B Complex.

LATIN AMERICA

Health Activities in Latin America.—*Inter-American Congress on Radiology.*—The second Inter-American Congress of Radiology, originally scheduled to be held in January and later postponed on account of transportation difficulties, will be held in Havana, November 17-22. Headquarters are at the Hotel Nacional. Radiologists of the United States and Canada desiring to present papers at the congress should communicate promptly with Dr. James T. Case, chairman, in care of the American College of Radiology, 20 North Wacker Drive, Chicago 6. Dr. José F. Merlo Gómez, Argentina, is president of the congress and Dr. Pedro L. Fariñas, Havana, president-elect.

Special Society Election.—At a recent meeting of the Minas-Gerais Society of Leprology Dr. Orestes Diniz was elected president, Prof. Olinto Orsini de Castro vice president, Dr. Antonio Carlos Horta secretary and Dr. Josefino Aleixo treasurer.

FOREIGN

Second Reading Approved for Health Bill.—The House of Commons approved the second reading of the national health service bill today by 359 votes to 172 after three days of debate, according to the Chicago *Sun*. By this vote the House decided that Britain is to have a system of socialized medicine beginning at the end of next year, with all medical services of every description provided free of charge to the public, hospitals administered and financed by the government and doctors paid salaries and fees from the government. The bill now goes to the committee, where minor modifications may be accepted, but no major change or rejection of the bill now is possible. Under the bill the practice of medicine for private fees will still be permitted for those who are willing to pay fees for extra service, but it is doubtful whether this will take place on more than a very small scale. The organized medical profession demonstrated its dislike of the bill at a noisy meeting of the British Medical Association, which ended its second day after passing numerous resolutions condemning the bill in general. Only five of the three hundred doctors who supported the motion approved the "general framework" of the bill. The bill enjoyed the support of the Socialist Medical Association, however, and the delegates to the British Medical Association convention recognized the inevitability of their position to the extent of passing several resolutions offering constructive amendments. One such amendment suggested that the system be financed out of compulsory health insurance based on ability to pay, as well as out of taxes. Another proposed that expectant mothers be allowed to choose their own doctors and a third asked for government regulation of the sale and advertisement of "patent medicines."

CORRECTION

Incorrect Name.—A news item in THE JOURNAL, March 30, page 885, announced that Dr. Milton B. Plotz, Brooklyn, was executive secretary of the International and Spanish Speaking Association of Physicians, Dentists and Pharmacists. Dr. Plotz writes that this is an error and that he does not hold office in this or any other medical organization.

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Deaths

Simon Flexner ✠ renowned pathologist and former director of the Rockefeller Institute for Medical Research, died May 2 in the Presbyterian Hospital, New York, aged 83.

Dr. Flexner was born in Louisville, Ky., March 25, 1863. He was educated in the local public schools and graduated at the University of Louisville Medical Department in 1889. He did postgraduate work at Johns Hopkins University School of Medicine, Baltimore, and in Strasbourg, Berlin and Prague, and at the Pasteur Institute. From 1895 to 1898 he was associate professor of pathology at Johns Hopkins and professor of pathologic anatomy from 1898 to 1899, when he went to the University of Pennsylvania School of Medicine, Philadelphia, to serve until 1903 as professor of pathology, director of the Ayer Clinical Laboratory, 1901 to 1903, and pathologist at the University Hospital and the Philadelphia Hospital, 1900-1903. He joined the Rockefeller Institute for Medical Research as director of laboratories in 1903, a position he held until 1935, when he became director emeritus, having served as director since 1920. He was Eastman professor at the University of Oxford in 1937 and 1938. He had been a colonel in the Officers' Reserve Corps of the U. S. Army, serving as lieutenant colonel in the medical corps of the U. S. Army in 1917, becoming in 1919 a colonel and assistant surgeon general of the U. S. Public Health Service. He had been a trustee of Johns Hopkins University, 1937-1942, chairman of the Public Health Council of the New York State Department of Health 1936-1942 and member of the advisory committee of the American Red Cross. He had been a member of the National Advisory Health Council created by Congress in 1930 and of the U. S. Science Advisory Board named by President Roosevelt in 1934. He had been president of the Society of Experimental Biology in 1906, of the Harvey Society in 1910 and of the American Association for the Advancement of Science in 1920 and held membership in many societies in the United States, Latin American countries and abroad.

Numerous honorary memberships had been conferred on Dr. Flexner. Prizes awarded to him included the Cameron Prize from Edinburgh University in 1911 and the William Wood Gerhard Medal from the Pathological Society of Philadelphia in 1931. He had delivered such notable lectures as the Kober, Herter, Gehrmann and Pasteur lectures.

SIMON FLEXNER, M.D., 1863-1946

Dr. Flexner had contributed more than three hundred and fifty original articles to the literature on pathology and bacteriology. He discovered the dysentery bacillus which bears his name, was the first to record the phenomenon which later became known as anaphylaxis, was the first to advocate intrathecal injection in the treatment of meningitis, the first to transmit experimental poliomyelitis in series and to produce the efficient serum against meningococcic infection. Dr. Flexner introduced a new concept of the pathogenesis of poliomyelitis and the recognition of the olfactory lobes as the route for the virus from the nasal passages to the brain. Other notable achievements include his studies of the biochemical constitution of snake venoms, the pathology of toxalbumin intoxication, epidemic cerebrospinal meningitis, experimental epidemiology, experimental pancreatitis and fat necrosis and the cause, mode of transmission and serum treatment of poliomyelitis.

James Fulton Percy ✠ Los Angeles; Bellevue Hospital Medical College, New York, 1886; born in Bloomfield, N. J., in 1864; clinical professor of surgery at the College of Medical Evangelists; member of the founders group of the American Board of Surgery; delegate from Illinois to the American Medical Association in 1905, 1906, 1908 and 1909 and from California in 1931; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons; past vice president of the Los Angeles Medical Society; past president of the Los Angeles Surgical Society, Los Angeles Cancer Society, Western Surgical Association and the Illinois State Medical Society, serving as secretary of its judicial council for seventeen years; honorary member of the Southern California Medical Association and the Hollywood Academy of Medicine; member of the Association of Military Surgeons of the United States; one of the founders and a fellow of the American College of Surgeons; member of the first draft board of Knox County, Ill., in 1916; chief of medical staff, U. S. Army Base Hospital, Camp Kearny, 1917-1919; lieutenant colonel, medical reserve corps, U. S. Army, not on active duty; honor guest at Clinical Congress of Surgeons of North America at a meeting in London in 1914; chief surgeon, cancer service at the Los Angeles County Hospital; attending surgeon at the French and White Memorial hospitals, and the Presbyterian Hospital-Olmstead Memorial; consulting surgeon, Los Angeles Orthopedic Hospital School for Crippled Children; developed surgical instrument known as Percy cautery in 1904; called the first meeting in Galesburg, Ill., out of which grew the Galesburg Cottage Hospital in 1888; in 1914 awarded the honorary degree of master of arts by Knox College, Galesburg; died April 26, aged 82.

Oliver Paul Humpstone ✠ Speculator, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1899; born in Philadelphia, Aug. 11, 1875; emeritus professor of clinical obstetrics and gynecology at the Long Island College of Medicine, Brooklyn, where he had been professor from 1931 to 1941; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; past president of the Medical Society of the County of Kings, of which he had been an honorary member, the New York Obstetrical Society and the Brooklyn Gynecological Society; fellow of the American College of Surgeons; member of the local draft board number 46 during World War I; served on the staffs of the Wyckoff Heights, Kingston Avenue and St. John's hospitals in Brooklyn, Rockaway Beach (N. Y.) Hospital, North Country Community Hospital, Glen Cove, and St. Luke's Hospital in Newburgh; director emeritus of the division of obstetrics and gynecology at the Methodist Hospital in Brooklyn, where he served as chief of the department and where he had been associated since serving his internship; credited with the development of the maternity service at the hospital; died January 23, aged 70, of carcinoma of the prostate.

Stirling Everette Russ, San Antonio, Texas; Baylor University College of Medicine, Dallas, 1932; born in San Antonio Nov. 20, 1906; member of the American Medical Association and the Texas Surgical Society; fellow of the American College of Surgeons; in 1936 secretary of the section on surgery of the State Medical Association of Texas; served on the staffs of the Medical and Surgical, Robert B. Green, Santa Rosa and Nix hospitals; began active duty in the medical corps, Army of the United States, on Nov. 20, 1940; first stationed at Camp Stewart, Ga., being sent from there to Fort William Davis, Canal Zone, at which post he was stationed for nineteen months; returned to this country as a patient with tropical malaria; his next assignment was William Beaumont General Hospital, El Paso, following which he served as assistant chief of the surgical service, Ashburn General Hospital, McKinney; transferred to the Station Hospital, Camp Hood, and was separated from the service on Dec. 2, 1945; died January 1, aged 39, of heart disease.

Albert Perkins Tibbets ✠ Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1910; born in 1884; formerly assistant demonstrator of anatomy, clinical instructor in ophthalmology and otolaryngology, clinical associate in laryngology and otology and clinical professor of otolaryngology at his alma mater; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; past president of the Washington Medical and Surgical Society; served during World War I; on the

staffs of the Episcopal Eye, Ear and Throat Hospital, Gallinger Municipal Hospital and the George Washington University Hospital; died in Chevy Chase, Md., January 31, aged 61, of cerebral hemorrhage.

Samuel Bayard Woodward ✠ Worcester, Mass.; Harvard Medical School, Boston, 1878; born in Worcester, Aug. 24, 1853; past president of the Worcester District Medical Society, the Massachusetts Medical Society and the Harvard Medical Alumni Association; fellow of the American Association for the Advancement of Science; for many years affiliated with the City, St. Vincent, Worcester State and Memorial hospitals; chairman of the board of trustees of the Worcester County Institution for Savings, where he had been a corporator, trustee, vice president and president; at one time president of the chamber of commerce; died January 29, aged 92.

Harley James Hallett ✠ Colonel, U. S. Army, retired, Highland Park, Fla.; Jefferson Medical College of Philadelphia, 1905; fellow of the American College of Physicians; entered the medical corps of the U. S. Army as a first lieutenant in 1911; promoted through the various ranks to that of colonel; served during World War I; retired Nov. 30, 1940; during World War II took an active part in civilian defense work and with the Red Cross, which he served as physician to the local blood bank; died December 11, aged 65, of coronary occlusion.

George Washington Allen Jr. ✠ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1900; fellow of the American College of Surgeons; died in the Nix Hospital December 23, aged 69, of lobar pneumonia.

Ulysses Grant Arnett, Point Pleasant, W. Va.; Barnes Medical College, St. Louis, 1903; served during World War I and as county coroner; died December 22, aged 77.

Ida Badanes, Los Angeles; Boston University School of Medicine, 1897; died in Santa Monica January 27, aged 75, of cerebral hemorrhage.

Harry Bailey ✠ Hartford, Conn.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1922; born in New Haven, Aug. 10, 1898; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology and the New England Dermatological Society; consultant at the State Veterans Hospital, Rocky Hill; attending dermatologist at the Mount Sinai and Municipal hospitals; died January 12, aged 47, of acute peritonitis and septicemia.

John William Bailey, Des Moines; State University of Iowa College of Medicine, Iowa City, 1905; member of the American Medical Association; served as coroner of Story and Polk counties; died January 16, aged 62, of coronary occlusion.

Clayton H. Bayard, Orono, Maine; College of Physicians and Surgeons, Baltimore, 1892; honorary member of the Maine Medical Association; member of the American Medical Association; died January 14, aged 79, of cerebral hemorrhage.

Charles Abbott Beach, Elijah, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1917; died January 23, aged 63, of chronic nephritis.

Joseph Anthony Benedetto, Chicago; Chicago College of Medicine and Surgery, 1913; on the staffs of the Mother Cabrini Memorial and Columbus hospitals; died January 25, aged 54, of carcinoma of the liver.

Martin L. Bertolette, Stony Creek Mills, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1878; on the staff of St. Joseph Hospital, Reading; died January 26, aged 89, of cerebral hemorrhage.

Samuel Byron Biller, Brooklyn; Boston University School of Medicine, 1935; interned at the Hahnemann Hospital in Scranton, Pa.; served a residency in pathology at the Montefiore Hospital, New York, and a residency in surgery at the Jewish Hospital; began active duty as a captain in the medical corps, Army of the United States, in June 1942; promoted to major; service terminated during December 1945; died January 19, aged 36, of heart disease.

Louis A. Bize, Tampa, Fla.; Baltimore Medical College, 1895; served as president and chairman of the board of directors of the Citizens Bank & Trust Company; past president of the chamber of commerce; executive general agent of the Atlantic Coast Line Railroad; died January 9, aged 74, of congestive heart failure.

Walter Allen Blair ✠ Chester, Pa.; Temple University School of Medicine, Philadelphia, 1915; died December 19, aged 57, of coronary thrombosis and hypertension.

Means Blewett, Citronelle, Ala.; University of Tennessee Medical Department, Nashville, 1891; member of the American Medical Association; formerly mayor; died January 17, aged 77, of cardiovascular disease and angina pectoris.

Samuel Bolton, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1888; on the examining staff of the John Hancock Mutual Life Insurance Company; for many years president of the Bucknell Alumni Association of Philadelphia; one of the founders and for many years affiliated with the Frankford Hospital, where he died January 11, aged 82, of arteriosclerotic heart disease and bronchiectasis.

Ianthis Roland Boothby ✠ Clinton, N. J.; Boston University School of Medicine, 1905; served for many years as president of the board of education; died January 20, aged 63, of coronary thrombosis and gastric ulcer.

James Grimes Bostwick ✠ Mishawaka, Ind.; Rush Medical College, Chicago, 1902; served during World War I; member of the staff of St. Joseph Hospital; died January 7, aged 67, of cerebral hemorrhage.

Harry G. Bristow ✠ St. Louis; St. Louis University School of Medicine, St. Louis, 1925; chemist, U. S. Bureau of Animal Industry, 1909-1910; instructor in organic chemistry, Missouri State University, 1910-1911; formerly instructor, assistant professor, associate professor and professor of chemistry at his alma mater, where he had been assistant and instructor in internal medicine; died in St. Mary's Hospital February 6, aged 57, of coronary thrombosis.

George Hustead Brownfield ✠ Fairmont, W. Va.; College of Physicians and Surgeons, Baltimore, 1898; honorary member of the Marion County Medical Society and the West Virginia State Medical Association; died March 21, aged 74, of heart disease.

Ruth Mack Brunswick ✠ New York; Tufts College Medical School, Boston, 1922; member of the American Psychoanalytic Association and the New York Psychoanalytic Society; died January 24, aged 48, of pneumonia.

Edwin Lee Burton ✠ McKinney, Texas, Kentucky School of Medicine, Louisville, 1889; specialist certified by the American Board of Otolaryngology; owner of the Burton's Eye, Ear, Nose and Throat Hospital; affiliated with the McKinney City Hospital; died January 19, aged 80, of coronary occlusion.

Emilie J. Chalfont Carriere, Bostonia, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1895; died January 13, aged 72, of myocarditis.

Cap James Carter, Magee, Miss.; University of Tennessee College of Medicine, Memphis, 1914; died in Meridian (Miss.) Hospital January 26, aged 57, of pneumonia.

Lee Landruf Collins, Port Barre, La.; Memphis (Tenn.) Hospital Medical College, 1906; died February 18, aged 65, of cardiac failure.

Walter Henry Conley, Lake Worth, Fla.; Albany (N. Y.) Medical College, 1891; at one time medical superintendent of the Metropolitan Hospital, Welfare Island; in 1930 retired from his position as general medical director of the City of New York Department of Hospitals; died January 9, aged 76, of cerebral hemorrhage.

Charles Larkin Conroy ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; fellow of the American College of Surgeons; on the staff of St. Francis Hospital in Evanston, Ill., where he died January 26, aged 67, of coronary thrombosis and diabetes mellitus.

Paul Raymond Correll ✠ Easton, Pa.; Medico-Chirurgical College of Philadelphia, 1908; chairman of the state board of medical education and licensure; served during World War I; on the staff of the Easton Hospital; fellow of the American College of Surgeons; died March 1, aged 61, of cirrhosis of the liver.

Leonard H. Crane, Menasha, Wis.; Milwaukee Medical College, 1903; died in the Community Hospital, New London, January 7, aged 65, of heart disease and cirrhosis of the liver.

Joseph Reed Crowder ✠ Sullivan, Ind.; Rush Medical College, Chicago, 1897; past president of the Sullivan County Medical Society; formerly member of the school board; at one time associated with the R. H. Crowder Memorial Hospital; died in New Smyrna, Fla., January 22, aged 71, of myocarditis.

Albert L. Davenport ✠ Holdenville, Okla. (licensed in Oklahoma under the Act of 1908); served as county health officer; died December 9.

Amplias Warrick Davis ✠ Madisonville, Ky.; Louisville Medical College, 1898; served as treasurer and vice president of the state medical association and as a member of the state board of health; a captain in the medical corps of the U. S. Army serving overseas during World War I; lieutenant colonel, medical reserve corps, U. S. Army, not on active duty; on the staff of the Hopkins County Hospital; died March 27, aged 71, of cardiovascular renal disease.

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Eugene Davis, New Orleans; University of Virginia Department of Medicine, Charlottesville, 1899; member of the American Medical Association and the West Virginia State Medical Association; formerly health commissioner of Charleston, W. Va.; served as a major in the medical corps of the U. S. Army during World War I; at various times officer in charge of Veterans Administration facilities; died in the U. S. Marine Hospital January 14, aged 75, of cardiorenal disease and arteriosclerosis.

Edgar Herbert Earl, Jamaica, N. Y.; Long Island College Hospital, Brooklyn, 1908; died January 20, aged 82, of diabetes mellitus and cerebral arteriosclerosis.

John A. Eason, Leapwood, Tenn.; Memphis (Tenn.) Hospital Medical College, 1903; died December 30, aged 80.

Oliver Van Auken Emery, Washington, D. C.; Columbian University Medical Department, Washington, 1902; also an attorney; for many years associated with the department of internal revenue; died in Port Jervis, N. Y., January 7, aged 76, of heart disease.

Ella Thompson Fast, Paulding, Ohio; Cincinnati College of Medicine and Surgery, 1897; died December 31, aged 74.

Filip August Forsbeck, Oconomowoc, Wis.; the Hahnemann Medical College and Hospital, Chicago, 1895; fellow of the American College of Surgeons; served during World War I; formerly member and secretary of the state board of medical examiners; at one time a member and president of the staff of St. Mary's Hospital in Milwaukee; died January 18, aged 72, of carcinoma of the bladder.

Charles Hughes Fortner ✠ Coffeyville, Kan.; University Medical College of Kansas City, Mo., 1904; in 1941 named head examining physician for the Selective Service Board; formerly associated with the Coffeyville General Hospital; division surgeon for the Missouri Pacific Railroad; died January 11, aged 73, of hypertension.

Herman J. Friedman ✠ Rock Island, Ill.; Chicago College of Medicine and Surgery, 1912; died January 31, aged 71, of rheumatic heart disease.

Ward Anderson Fritz, Wooster, Ohio; Western Reserve University School of Medicine, Cleveland, 1928; member of the American Medical Association; interned at the City Hospital in Cleveland; served a term on the school board; a major in the medical corps, Army of the United States, during World War II; began active duty on Oct. 19, 1940 and was relieved from active duty in 1945; died January 19, aged 46, of coronary thrombosis.

Leon J. Gibson, Vassar, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1904; served overseas during World War I; died January 31, aged 70, of cerebral hemorrhage.

Olin Farris Gober ✠ Temple, Texas; University of Texas School of Medicine, Galveston, 1905; fellow of the American College of Physicians; physician in charge of the Gulf, Colorado and Santa Fe Hospital; died January 26, aged 67, of coronary sclerosis.

John Newton Goode, Saranac Lake, N. Y.; New York Homeopathic Medical College, New York, 1903; died January 23, aged 72, of arteriosclerosis.

Florence Smith Goodhue, Cardington, Ohio; Homeopathic Hospital College, Cleveland, 1884; died January 2, aged 84, of influenza and a fractured hip, received in a fall.

Hedley C. W. Graham, Rochester, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1889; died in the Rochester State Hospital January 12, aged 83, of chronic myocarditis.

Cecil Charles Grant ✠ Cedar Falls, Iowa; Chicago College of Medicine and Surgery, 1914; specialist certified by the American Board of Otolaryngology; on the staff of the Sartori Memorial Hospital, where he died January 14, aged 58, of hemorrhagic purpura.

James Grieve, Perth Amboy, N. J.; Long Island College Hospital, Brooklyn, 1921; member of the American Medical Association; on the staff of the Perth Amboy General Hospital, where he died January 27, aged 57, of coronary thrombosis.

John Thomas Hairston ✠ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1928; fellow of the American College of Surgeons; died in the Physicians and Surgeons Hospital January 24, aged 42, of carcinoma of the rectum.

Edward Everett Hamer ✠ Carson City, Nev.; Kentucky School of Medicine, Louisville, 1906; since 1927 state health officer for Nevada; past president of the Nevada State Medical Association; past secretary of the Nevada State Board of Medical Examiners; delegate from Nevada to the American Medical Association at the 1935 special session; past district surgeon for Southern Pacific Railroad; died April 13, aged 68, of cardiac failure.

Walter Addison Hancock, Fairfield, Ill.; Marion-Sims College of Medicine, St. Louis, 1895; member of the American Medical Association; died in the Deaconess Hospital, Evansville, Ind., January 16, aged 74, of cerebral hemorrhage.

William Davis Harrell, Norris City, Ill.; Rush Medical College, Chicago, 1892; member of the American Medical Association; died in St. Louis January 15, aged 87, of coronary thrombosis.

William Emmett Higbie, Canton, Ohio; Medical College of Ohio, Cincinnati, 1899; died January 29, aged 71, of heart disease.

William Henry Hinkel ✠ Tamaqua, Pa.; Jefferson Medical College of Philadelphia, 1908; vice president and a director of People's Trust Company; died January 20, aged 60, of coronary thrombosis.

Jesse James Holes ✠ Mount Dora, Fla.; Detroit College of Medicine, 1904; member of the Michigan State Medical Society and the American Urological Association; served during the Spanish-American War and World War I; died in a hospital at Eustis, January 19, aged 73, of pneumonia.

Alexander Hood, Birmingham, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; died January 15, aged 68, of coronary occlusion.

Philip Horowitz, Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1904; served as treasurer of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists; major, medical reserve corps, U. S. Army, not on active duty; formerly on the staff of the Beth Israel Hospital in New York and an honorary fire department surgeon; died in the Cedars of Lebanon Hospital January 17, aged 64, of cerebral hemorrhage.

Herman Max Hurwitz ✠ Hartford, Conn.; Yale University School of Medicine, New Haven, 1912; member of the American Academy of Orthopedic Surgeons; consultant orthopedist at the Veterans Administration Facility, Newington; on the staffs of the Mount Sinai and Municipal hospitals; died January 16, aged 55, of coronary occlusion.

Walter Lee Jackson, Ranger, Texas; Baylor University College of Medicine, Dallas, 1917; member of the American Medical Association; served in France during World War I; on the staff of the Ranger General Hospital; for many years member of the board of trustees of the local school board, serving as its president for two years; died March 13, aged 57, of coronary occlusion.

Gedney Jenks, Hastings-on-Hudson, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1908; died January 13, aged 66, of carcinoma of the throat.

Homer L. Kindred, Meadow Grove, Neb.; Kansas City (Mo.) Medical College, 1892; member of the American Medical Association; served as mayor, member of the school board and coroner; died January 22, aged 79, of injuries received when he was struck by an automobile.

Margaret W. Rhode Koenig, Waterloo, Neb.; John A. Creighton Medical College, Omaha, 1903; died January 10, aged 70, of cerebral hemorrhage.

Louis J. Krouse, Cincinnati; Medical College of Ohio, Cincinnati, 1879; member of the American Proctologic Society; fellow of the American College of Surgeons; on the staff of the Jewish Hospital; died January 20, aged 89, of heart disease.

Roderick Gambrell Lander, Goliad, Texas; Southwestern University Medical College, Dallas, 1911; served during World War I; for many years county health director with the Mississippi State Board of health; did part time work with the Texas State Board of Health in 1941; died January 6, aged 58, of cerebral hemorrhage.

Philip Cadwell Leavenworth, Cleveland; Western Reserve University School of Medicine, Cleveland, 1944; served an internship and residency at the University Hospitals; died February 25, aged 25, in an automobile accident.

Abraham Aaron Levy ✠ New York; Cornell University Medical College, New York, 1903; specialist certified by the American Board of Internal Medicine; for many years on the staff of St. Mark's Hospital; on the staff of the New York Post-Graduate Medical School and Hospital, where he died January 16, aged 69, of carcinoma of the tranverse colon.

Frederick Clarence Lord ✠ Biddeford, Maine; Medical School of Maine, Portland, 1903; on the staff of the Webber Hospital; died January 28, aged 69, of coronary thrombosis.

Benjamin Dane Luck Sr. ✠ Pine Bluff, Ark.; Jefferson Medical College of Philadelphia, 1903; chairman of the Jefferson County Board of Health; interned at the St. Vincent's Hospital in Birmingham, Ala.; fellow of the International College of Surgeons; served as a member of the state board of nurse examiners; died in the Davis Hospital, January 23, aged 66, of coronary thrombosis.

William Solomon Lynch ✠ Lake City, S. C.; Medical College of the State of South Carolina, Charleston, 1899; served during World War I; major, medical reserve corps, U. S. Army, not on active duty; died December 21, aged 70.

Lyle Dee McMillan ✠ Mackinaw City, Mich.; University of Michigan Medical School, Ann Arbor, 1916; at one time teacher of science in high schools in Petoskey and Hancock, Mich.; spent several years in the Philippines in the U. S. civil service; served six months in France as a surgeon of the U. S. Marine Corps during World War I; died February 18, aged 56, of heart disease.

Stephen Codding Mason ✠ Menominee, Mich.; Rush Medical College, Chicago, 1905; served as president and vice president of the Upper Peninsula Medical Society; member of the board of education; on the staff of St. Joseph's Hospital, where he died January 10, aged 65, of coronary thrombosis.

William Harvey Mercer ✠ Taylorville, Ill.; Marion-Sims College of Medicine, St. Louis, 1898; past president of the Christian County Medical Society; died in the Barnes Hospital, St. Louis, January 23, aged 75, of carcinoma of the stomach.

Elbert Ervin Munger ✠ Spencer, Iowa; State University of Iowa College of Medicine, Iowa City, 1894; born in Lima, Ohio, June 23, 1867; for many years member of the Clay County Insanity Commission; author of a county hospital bill, which was enacted into law; past president of the Clay County Medical Society; member of the county draft board during World War I; on the staff of the Spencer Municipal Hospital; died March 14, aged 78, of virus pneumonia.

Henry Garrett Munson ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1892; since 1923 secretary of the Philadelphia County Medical Society; assistant secretary of the Medical Society of the State of Pennsylvania; served during World War I; on the staff of the Jefferson Hospital and the Presbyterian Hospital, where he died April 9, aged 76.

William Carl Newell ✠ Ottumwa, Iowa; Marion-Sims College of Medicine, St. Louis, 1899; Barnes Medical College, St. Louis, 1900; fellow of the American College of Surgeons; on the staffs of the Ottumwa and St. Joseph's hospitals; died January 18, aged 69, of carcinomatosis.

Walter Aaron Palmer ✠ Castle Rock, Colo.; Rush Medical College, Chicago, 1892; associate member of the Colorado State Medical Society, medical examiner for the selective service board during World Wars I and II; participated in the work of the city council; served as city and county health officer and physician; an officer of the First National Bank of Douglas County; died March 31, aged 78, of carcinoma.

Charles Joseph Vincent Redding, Owego, N. Y.; Cornell University Medical College, New York, 1908; member of the American Medical Association; died in the Robert Packer Hospital, Sayre, Pa., January 31, aged 66, of pneumonia and acute leukemia.

Daniel James Rudasill, Kingwood, W. Va.; Medical College of Virginia, Richmond, 1905; died March 29, aged 66, of coronary thrombosis.

Robert Thomas Rudd, Fulton, Ky.; Eclectic Medical Institute, Cincinnati, 1896; died in the Fuller-Gilliam Hospital, Mayfield, January 28, aged 76, of lobar pneumonia.

Lida Burgess Russell, Denver; Denver Homeopathic College, 1907; died in St. Luke's Hospital January 12, aged 84, of carcinoma of the stomach.

James O. St. Dizier ✠ Walls, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1900; parish coroner; died January 17, aged 65, when the automobile in which he was driving was struck by a train.

Louis Van Sams ✠ Denver; University Medical College of Kansas City, Mo., 1903; served during World War I; formerly medical director of the Remington Arms Plant; just a week before his death had been made medical director of the Denver General Hospital, where he died January 20, aged 65, of acute disseminated tuberculosis.

J. Clarence Sharp, New York; Bellevue Hospital Medical College, New York, 1886; member of the American Medical Association; specialist certified by the American Board of Otolaryngology; honorary police surgeon; on the staff of the Manhattan Eye, Ear and Throat Hospital, where he died January 17, aged 85, of pneumonia.

Anna P. Sharpless, Bala-Cynwyd, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1889; served on the staff of the Western Philadelphia Hospital for Women; died January 27, aged 82, of lymphatic leukemia.

Harry Laurence Stevens, New Bedford, Mass.; Baltimore Medical College, 1891; member of the American Medical Association; formerly physician to the overseer of the poor and city physician; served as a member of the state board of registration in medicine; died January 29, aged 75, of hypertensive heart disease.

Samuel Stevens, Mendon, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1894; died January 6, aged 77, of carcinoma of the right lung.

Chester T. Stewart, Buffalo; College of Physicians and Surgeons, Baltimore, 1882; died January 25, aged 84, of cerebral thrombosis.

Fred Elliston Strout, Gardiner, Maine; Medical School of Maine, Portland, 1890; past president of the chamber of commerce; died December 1, aged 78, of angina pectoris.

William Franklin Sult, Gilman, Iowa; Iowa Eclectic Medical College, Des Moines, 1892; member of the American Medical Association; died January 14, aged 77, of heart disease.

Eugene Talmage, Los Angeles; Hahnemann Medical College and Hospital of Philadelphia, 1891; died December 12, aged 79, of adenocarcinoma of the prostate.

Jackson Taylor ✠ Coatesville, Pa.; Jefferson Medical College of Philadelphia, 1904; fellow of the American College of Surgeons; chief surgeon, Coatesville Hospital; died January 20, aged 69, of coronary occlusion.

Leslie Allin Turner ✠ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1898; formerly associated with the department of health of New York City; died January 19, aged 70, of coronary occlusion.

Harry Fuller Waite, Hollywood, Fla.; University of the City of New York Medical Department, New York, 1897; died in Miami, January 26, aged 73, of epithelioma of the right eye and face.

Charles Norton Warner ✠ Litchfield, Conn.; Jefferson Medical College of Philadelphia, 1896; president of the Litchfield Savings Society; past president of the Litchfield County Medical Association; on the staffs of the Charlotte Hungerford Hospital, Torrington, and the Waterbury Hospital, Waterbury; died January 27, aged 80, of arteriosclerotic heart disease.

Job Harry Weeks, Philadelphia; Jefferson Medical College of Philadelphia, 1886; died January 25, aged 82, of mitral stenosis and pulmonary tuberculosis.

John William West ✠ Narka, Kan.; Lincoln Medical College of Cotner University, 1897; died in January, aged 72, of chronic myocarditis.

Martin Daniel Westley ✠ Cooperstown, N. D.; Jefferson Medical College of Philadelphia, 1904; served as a captain in the medical corps of the U. S. Army during World War I, with the 26th division and participated in the Meuse, Argonne and Chateau Thierry campaigns; examining physician for Griggs County during World War II; member of the North Dakota State Committee on Maternal and Child Welfare; died in the Northwestern Hospital, Minneapolis, March 28, aged 72, of uremia following transurethral surgery.

Milton Cayce Wiggins, Tucson, Ariz.; University of Tennessee College of Medicine, Memphis, 1915; member of the American Medical Association, Tennessee State Medical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; served during World War I; died January 12, aged 55, of coronary disease.

Gustave Windesheim, Kenosha, Wis.; Northwestern University Medical School, Chicago, 1891; member of the American Medical Association; past president of the State Medical Society of Wisconsin; served as member and president of the state board of health and health commissioner of Kenosha; a founder and for many years trustee of the Wisconsin Anti-Tuberculosis Association; for many years visiting physician at the Willowbrook Sanitarium; died in a local hospital January 19, aged 91, as the result of a fall.

Firman M. Wurtsbaugh, Richwood, Ohio; Eclectic Medical Institute, Cincinnati, 1908; member of the American Medical Association; past president of the Union County Medical Society; past president of the Union County Board of Health; served as county health officer; died in the Mount Carmel Hospital, Columbus, January 22, aged 72, of intestinal perforation and peritonitis.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

April 13, 1946.

The Proposed National Health Service

At largely attended meetings of the medical profession, organized by the British Medical Association throughout the country, strong opposition is being manifested to the government bill for a national health service. At the house of the British Medical Association in London the audience not only packed but overflowed the great hall. Dr. Charles Hill delivered an address in which he referred to the bill as containing both proposals which should be commended and proposals which should be condemned. For example, the proposal to plan all hospitals, council and voluntary, over natural hospital regions was welcomed, provided the regional boards were properly constituted. Four main issues were raised by the general practitioner proposals: to abolish good will in practices, to require practitioners entering the public service in future to secure the permission of a central committee, to remunerate general practitioners in part by salary and to organize general practice from health centers. The profession, which through its voluntary machinery had assumed the responsibility for the recruitment of doctors to the forces during the war, was capable of solving any problem of distribution remaining after the introduction of a comprehensive medical service. Inducement would suffice and direction was objectionable.

Dr. Hill advocated that general practitioners should be remunerated by capitation fee in proportion to the number of people who chose them. The salaried system endangered the public's free choice. Health centers were a useful conception worthy of widespread experiment. What the doctors needed was centers which could provide diagnostic and other aids, not merely places where a large number of people could collect in municipal premises. The bill could be amended so as to ensure the public's freedom and the cooperation of the medical profession. They were waiting for an indication from the minister whether he was prepared frankly to discuss the proposals with the only people who could make them work—the doctors. The medical profession did not want to be steamrollers into any form of service it felt to be contrary to the public interest.

Antituberculosis Legislation

The Government of Northern Ireland bill, which makes better provision for the prevention and treatment of tuberculosis, marks an advance in existing plans. A tuberculosis authority is to be set up for the whole country which will make provision for the accommodation and treatment of tuberculous persons, for the detection of cases and for preventing the disease by educational and other methods, including courses of instruction for medical students, doctors and nurses. This authority will be able to purchase or lease land, acquire or construct buildings to be used as hospitals, sanatoriums, dispensaries, clinics, health centers or occupational colonies. It will maintain and educate tuberculous children or children who have recovered from tuberculosis or who have been in contact with infection in their homes. It will train persons in methods of detecting, preventing and treating tuberculosis to that end testing apparatus and equipment, and maintaining laboratories for research. The authority also may contribute to the support of any association for training nurses or to any benevolent association in line with its purpose. The authority with such wide powers will have as a majority of its members nominees of the local authorities and in addition four other members nominated by the minister of health. It will also be possible co-opt one or two further members. The members are not to be paid any salary or fees but are to be reimbursed for expenses.

Whenever a physician intimates to the authority that a person shows symptoms of a tuberculous condition, that person may be called on to be examined medically for the purpose of diagnosis. The authority will also have power to require any person living in habitual contact with a person suffering from tuberculosis to be examined by a medical officer. It can also apply to a court of summary jurisdiction for an order to detain any person suffering from tuberculosis of the respiratory tract if he is in an infectious state and his home circumstances are such that proper precautions are not or cannot be taken. If the court is satisfied it may order the person to be kept in a hospital or institution for not more than three months, which may be renewed if the same conditions still obtain. If during the period of detention his condition improves so that there is no longer serious risk of infection, or if his home conditions become such as to permit the necessary precaution to be taken, he may be at once released from institutional control.

SWEDEN

(From Our Regular Correspondent)

STOCKHOLM, April 4, 1946.

Half a Million Kronor Granted to Ninety-Seven Scientists

The Swedish government Medical Research Board recently granted considerable sums of money to ninety-seven medical investigators, including professors and students, for studies of a wide variety of problems, ranging from the origin of hay fever to the conversion of proteins in the nerve cells. Among the recipients were Dr. C. Juhlin-Dannfelt, who for some time has been studying the pollen allergies in Sweden at the allergy clinic of Sabbatsberg Hospital in Stockholm. The clinic has been in existence for six years and has assembled a great deal of material on the grasses of this country and their relation to allergies. Dr. Åke Öhrström, another recipient, will use the money to continue his research into the brain metabolism involved in certain psychoses, particularly schizophrenia and manic-depressive psychosis. He is using radioactive phosphorus to determine the metabolism in the cells of the brain and has thus far been able to confirm that the epiphysis has a great deal of glandular activity. The more practical side of his investigation is to establish whether mental diseases are due to a metabolic disturbance in the brain. Dr. Curt Åmark received a grant for the study of the causes of chronic alcoholism. He is working with about 700 carefully selected subjects in an attempt to determine the constitutional, social and other factors responsible for alcoholism. Some of the other grants will be used for study in the United States.

Ten Year Hospital Plan for Stockholm

What to do about the shortage of hospital space in Stockholm has long been a subject of discussion among the authorities here. Dr. Nils Hanson, director of the city's hospitals, has now presented a plan for the building of four new hospitals with about 600 beds each, which should take care of the needs of the next ten years. If the plan is realized, the number of hospital beds in Stockholm will increase from the present 3,371 to 5,601, which should be sufficient for a population of 830,000, if the need for beds is calculated on the basis of 6.7 per thousand. An additional 556 beds are planned for children.

"X-Ray Bus" to the Netherlands

As is probably known, Sweden is doing a great deal through its Red Cross to help alleviate suffering in Europe through gifts of food and medicine and even hospitals in the hardest hit countries. A great many undernourished children have also been brought to Sweden for care. Recently the Red Cross contributed a fully equipped x-ray bus to the Netherlands. X-ray examinations, chiefly of children, are to begin in Utrecht, and then the bus is to travel from city to city throughout the

Netherlands. The proportion of tuberculosis among the Dutch children, which before the war was the lowest in Europe, has increased by at least 45 per cent. Through the loan of this rather unique bus it is now hoped to detect and treat the disease in its early stages.

Serious Diphtheria Epidemic in Finland

The number of cases of diphtheria in Finland has been extremely high for the past few years. Normally there are about 1,000 to 4,000 cases annually, but in 1945 there were 17,899 cases, of which 1,005 were fatal. In Finland's armed forces between 1943 and 1945 more than 15,000 soldiers had the disease, and over 3,000 of the cases had a fatal outcome. The epidemic is still severe and shows no signs of receding.

Icelandic Gifts of Cod Liver Oil to European Children

Through a Red Cross drive in Iceland, enough money was collected to purchase about 160 tons of cod liver oil to be sent to the children of Austria, Poland, Czechoslovakia and Germany. A good portion of the oil has already been forwarded.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, April 3, 1946.

Blood Chemistry of Normal Adults

Dr. M. Pereira de Mesquita, with the cooperation of other physicians of the blood bank service of the Instituto Nacional de Puericultura, is attempting to establish the normal values of the most important components of the blood in healthy white adults in Rio de Janeiro. Three reports have been published on sugar, urea and creatinine. For the estimation of blood sugar the Folin-Wu method was used as modified by Andes and Northup for the photometer (Fisher's electrophotometer); 201 individuals were studied (144 males and 57 females). For the 144 males the results were minimum 73 mg., maximum 119, mean value 95.1 and standard deviation 9.3. For the 57 females the results were minimum 75 mg., maximum 112, mean value 91.9 and standard deviation 10.0. Urea was determined by the Marshall-Van Slyke method in 200 individuals (140 males and 60 females). For the 140 males the results were minimum 15.5 mg., maximum 45.5, mean value 30.3, standard deviation 7.2; for the 60 females the results were minimum 15.0 mg., maximum 40.2, mean value 26.2, standard deviation 6.9.

Meeting of Dietitians and Nutritionists

From April 3 to 8 the first Brazilian Congress of Dietitians and Nutritionists will be held in São Paulo under the sponsorship of the São Paulo Chemistry Association and the state Department of Health. The organization committee includes Drs. Nicolino Morena, Haroldo J. Reis and J. Assis Ribeiro of São Paulo and Dr. A. Paula Rodrigues of Rio de Janeiro. The subjects will be discussed in the following sections: Nutrition and Dietetics, Food Hygiene and Food Control, Food Chemistry, Standardization of Food Analysis Methods and Teaching of Food Chemistry. Included in the scientific contributions for presentation will be papers by Drs. Francisco Albuquerque, José Tobias Neto, Antonio T. Bragança, Pedro A. Pereira, Antenor P. dos Santos and Paulo Andrade from the Federal District and the states of São Paulo, Bahia, Rio Grande, Sergipe, Paraná and Minas Gerais.

Vital Statistics of Rio de Janeiro for 1945

Provisional data of vital statistics for Rio de Janeiro for the year 1945 show that the total number of deaths from all causes was 33,500, a crude annual death rate of 16.79 per thousand computed for a population of 1,995,000. This is slightly below the rates for the previous two years (18.50 for 1944 and 17.58 for 1943). The number of live births registered in 1945 was 42,930, corresponding to an annual birth rate of 21.52 per thousand, approximately the same as for the past two years (21.95 for 1944 and 21.63 for 1943). With 3,633 stillbirths the fetal mortality was 78.02, a rate almost identical with those of the last few years as a result of the high prevalence of syphilis in the population. The number of deaths from causes related to pregnancy, childbirth and the puerperium was 277, a maternal death rate of 6.45 per thousand live births (6.65 in 1944 and 6.33 in 1943). Of these 277 deaths 78 were due to puerperal infection, or 28.16 per cent of the maternal deaths, as compared with 38.87 in 1944, 34.88 in 1943 and 46.65 in the five year period 1938-1942.

The most important single cause of death was tuberculosis of all forms, with a total of 6,538 deaths (6,335 from tuberculosis of the respiratory system), or 19.52 per cent of the total of deaths from all causes, and a crude annual death rate of 328 per hundred thousand of population (326 in 1944, 325 in 1943 and 328 in the five year period 1938-1942). The mortality from tuberculosis remains practically stationary at a high level.

Brief Items

The administration of the state of São Paulo will promote the expansion and improvement of spas and climatic stations of its territory (at São Pedro, Lindoia, Serra Negra, Campos do Jordão, São José dos Campos and other places). The governor of the state has appointed a committee including Dr. Clementino Fraga, professor at the University of Rio de Janeiro, Dr. Aguiar Pupo, professor at the University of São Paulo, and Drs. H. Sampaio Correia and Nicolino Morena from the state Department of Health to study a plan of development.

The American government transferred to the administration of the state of Amazonas the hospital at Manaos that the U. S. Rubber Development Corporation constructed and equipped for the assistance of rubber agricultural workers of that organization's plantations. For some time yet, large quantities of natural rubber will be shipped to the United States, and the service of a good hospital is an important measure for the efficient production of the plantations.

At the meeting of the American International Institute of Child Welfare recently held at Montevideo, Uruguay, Dr. Mario Olinto, director of the National Institute of Child Health of Brazil and president of the meeting, presented several papers by Brazilian specialists and in an address reviewed child welfare work in Brazil.

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Marriages

VERNON ROWLAND, Cleveland Heights, Ohio, to Miss Georganne Williamson of Charleston, W. Va., in Cambridge, Mass., March 23.

HARRY DUFF RIDDLE, Gastonia, N. C., to Miss Mary Margaret Phillips of Belton, S. C., in New York, March 9.

HUGH ROBERT WATERS, Wisconsin Rapids, Wis., to Miss Patricia Ellen Keeble of St. Louis in Chicago, February 15.

CLARENCE L. ANDERSON, Tampa, Fla., to Miss Cicely Ann Laws of Brentwood, Md., in Durham, N. C., March 23.

HAROLD LEON POOLE, Spartanburg, S. C., to Miss Dora Nell Barkalow of Atlanta in Marietta, Ga., February 11.

GEORGE GERBER YOUNG, Des Moines, to Miss Margaret Adelle Jewett of Pasadena, Calif., recently.

BERT WAYNE MARKS to Miss Jeannette Lucille Wolf, both of Miami Beach, Fla., March 24.

JOHN WALLACE DAVIS, Philadelphia, to Miss Gail Gardner of Spokane, Wash., January 12.

THOMAS F. FRAWLEY to Miss Marigrace Cecelia Gould, both of Rochester, N. Y., March 23.

FRED M. JAMESON to Miss Doreen Taylor, both of Linden, Mich., in Flint, March 3.

PAUL J. VIGNOS JR., Canton, Ohio, to Miss Edith Ingalls of Cleveland, March 23.

Correspondence

TIC AND SPASM

To the Editor:—In Queries and Minor Notes (THE JOURNAL, March 16, p. 754) an opinion is asked on treatment of facial tic. First, was this case one of tic or of facial spasm? A clear distinction must be made between these two conditions, as they differ fundamentally in their nature, origin, symptomatology and therefore treatment. The description of the symptoms given is somewhat misleading. The terms "spasm" and "tic" are mentioned simultaneously.

Convulsive movements of the face appear in three principal forms: spasm, tic and epileptic twitchings. The last mentioned are usually associated with generalized or with focal epilepsy. Tic is characterized by a sudden and abrupt contraction of one or several muscles. As these are invariably always the same, they are coordinate and always executed for a certain functional purpose. Originally the movements of the tic were made for a certain good reason and under the influence of the will. For example, a foreign body accidentally gets under a person's eyelid. Irritation is produced. He closes and opens his eyelids. He endeavors to get rid of it. Finally the body is removed. Normally this is the end of the trouble. But certain persons continue the reproduction of the sensation of the foreign body. They will repeat the act of closing and opening the eye. Gradually they forget the original trouble. The act becomes a habit and the movement becomes automatic. While at the beginning the movements were logical and reasonable, now they are superfluous. It is evident that we deal here with an abnormal physical phenomenon and with a mentally unstable individual. That a psychic element is predominant in tic can be seen also from the singular satisfaction the person experiences from indulging in tic movements. He may make an effort to inhibit the tic, but the effort of his will is meager and short in duration. The last characteristic diagnostic element of tic is the fact that the muscular contractions do not correspond to a well defined anatomic distribution of a certain nerve supply.

Facial spasm does not present a reproduction of a purposeful physiologic act. It consists in a motor reaction following an irritation of any part along the spinal reflex act. It is strictly confined to the area of distribution of the facial nerve. The muscular contractions in spasm are either slow and coarse or rapid and fascicular. The muscles supplied by the upper facial nerve alone may be involved, and then we observe a contraction of the frontalis and orbicularis palpebrarum muscles or else the lower facial nerve is irritated and the muscle of the lower part of the face are contracted; also the muscles of the neck on the same side. While the twitching in tic is an exaggerated normal movement, made originally with a certain object in view, in spasm on the contrary the twitching is illogical and without any reasonable expression; it does not resemble the ordinary mimicry of the face. Here the will has no cerebral inhibitory power to arrest the attack, which is the opposite in tic. Spasm may occur in sleep, while tic does not. Tic is a mental phenomenon. Irritation of any portion of the seventh nerve or of its nucleus or else of the sensory fibers of the fifth nerve will produce a spasm through the reflex arc. Irritation of the palpebral mucosa will produce a spasm of the orbicularis.

In view of the different pathogenesis of the two disorders the treatment must logically differ. In tic the treatment must be directed chiefly toward the patient's psyche. Psychotherapy, with continuous training to immobilize the face and regularly practiced, will eventually bring results. The management of facial spasm must be totally different. Among all the methods used by competent men, injections of ethyl alcohol are the most satisfactory. The method consists in injecting with an ordinary hypodermic syringe into the facial nerve in the stylomastoid foramen 5 minims (0.3 cc.) of 80 per cent solution of alcohol. The injection can be done without a preliminary localized anesthetic.

Of course, anatomic knowledge of the exit of the nerve from the foramen is essential. As a point of departure, the end of the mastoid process can be taken. The foramen is situated in front and inward of the process. A successful injection means an immediate facial palsy and immediate disappearance of the spasm. The palsy is not permanent. Electrical treatment of the palsied muscles may be instituted three or four weeks after the alcohol treatment. The palsy usually lasts about three or four months. Recurrences of the spasm will in some cases occur. Repeated injections into the same nerve may be undertaken. In 1 of my cases there has been no recurrence after three years.

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RADIOACTIVE PHOSPHORUS IN POLYCYTHEMIA VERA

To the Editor:—Several weeks ago in an editorial you stated that radioactive phosphorus was the "method of choice" in the treatment of polycythemia vera. We feel that such a statement is not in keeping with the judgment of many clinical investigators who have had occasion to use radioactive isotopes in therapy.

Radiation therapy is highly empirical in its application. When radioactive isotopes are used, it should be kept in mind that a great deal of basic information is still lacking. We will mention only one example. Reinhard, Moore, Bierbaum and Kamen (*J. Lab. & Clin. Med.* **31**:107 [Feb.] 1946) point out that there is a wide discrepancy at the present time in the unit of dosage which is regarded in different laboratories as a millicurie. Two well known laboratories differ by a factor of 2.4. When one considers the fact that the ultimate effect of a dose of radio phosphorus may take many weeks to appear, this factor can easily represent the difference between a therapeutic dosage and one which may result in leukopenia and thrombocytopenia with fatal termination.

Radio phosphorus is already widely available, and recent developments in the field of nuclear fission should make this isotope much more available in the future. If its use in therapy is adopted too enthusiastically, more widespread use will undoubtedly result in many untimely deaths. We do not feel that radiation should be employed in any benign diseases in which alternative methods of control are available. This is especially true in the case of polycythemia, in which control by phlebotomy presents a simple and straightforward approach. Failure of this method is frequently due to the lack of appreciation of the quantity of blood which must be removed. Not only is it necessary to reduce the circulating hemoglobin to the desired level, but also the reserve iron stores must be depleted. In cases of polycythemia it should be pointed out that the venous hematocrit does not give the proper index of the total volume of the circulating red cells. Where proper facilities are available for determining red cell volumes by the radioactive iron or carbon monoxide rebreathing technics, it is suggested that these methods be used as a guide.

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Public Hospitals: Exemption from State Real Estate Tax.—The plaintiff, Fairmont Community Hospital Association, Inc., filed a petition to exempt certain of its real estate from taxes levied against it by the state. From an order finding that the real estate was not exempt from taxation, the plaintiff appealed to the Supreme Court of Minnesota.

Prior to Jan. 1, 1941 the building now operated by the plaintiff was operated by the Fairmont Clinic and Hospital Corporation, a private institution organized by three physicians, each of whom owned stock therein. These physicians maintained their offices in the hospital, and no other physicians in the area used its facilities. On January 1 the plaintiff purchased the property and commenced operations under the name of the Fairmont Community Hospital Association. No cash was involved in the transaction. The plaintiff's note for the purchase price, when paid, will be insufficient to take care of the unsecured creditors and stockholders of the old corporation. Under a collateral agreement the preferred stockholders could apply the par value of their stock on hospital services rendered for them by the plaintiff, and the plaintiff would apply such stock on its indebtedness. Since 1941 the plaintiff has done business on the premises as a public hospital in accordance with the objectives expressed in its articles, namely to operate a public hospital on a nonprofit basis, to furnish hospitalization to the sick and injured, to provide nursing care, to maintain a training school for nurses and to do all other acts which may lawfully be done by corporations of its class under the laws of the state. Any doctor in good standing may use its facilities. No one has ever been refused admittance to the hospital. No member of the corporation has made a profit of any kind from the hospital and no person has received any private gain or advantage from the earnings thereof. The patients employ the services of their own physicians and the latter look to the patients rather than to the hospital for compensation. When patients are unable to pay for hospitalization, the local relief office is asked to take care of the expenses involved, including medical and surgical fees. The county pays such charges. The hospital extends a lower rate to the county for poor patients. In 1941 and 1942 the hospital operated at a loss. In 1943 there was a profit which was used in making improvements and additions to the hospital, and on Jan. 1, 1944 a tax assessment for alleged 1943 taxes was levied against the petitioner's real estate. Under the Minnesota constitution "public hospitals" are specifically exempt from taxation.

The district court first denied exemption on the theory that the evidence indicated a private gain to some of plaintiff's organizers incompatible with the status of a public hospital. This was predicated on the fact that three of the incorporators of the Fairmont Community Hospital Association were also stockholders of the old corporation. We are of the opinion, said the Supreme Court, that the petitioner was organized as a public hospital and that during 1943 it was conducted as one. Therefore it was exempt from the tax involved. Under prior decisions, the court continued, a public hospital need not operate at a loss or as a charitable institution to remain eligible for exemption from taxation under the constitutional and statutory provisions referred to. "Operated for the benefit of the public" means operated without an intent to make a private profit. If the profit made does not go to plaintiff's incorporators or to any individual as private gain, plaintiff must be regarded as a public hospital. The record discloses that no part of such profit finds its way, by any device, into the private accounts of plaintiff's incorporators, officers or trustees, and, under its articles, such profit cannot be so diverted. Payment to the bondholders and preferred stockholders constitutes merely payment of the purchase price of the building and equipment. Surely it cannot be, concluded, said the Supreme Court, that a corporation organized to conduct a public hospital, and operated as such, loses its tax-exempt status because it uses such profits as it may derive in payment of the purchase price of its property. The reduction of the indebtedness of the old corporation is merely the payment of the purchase price of its property and has nothing to do with the status of the new corporation as a public or private institution.

The district court also ruled that the activities of some of the common stockholders of the old corporation who were also incorporators and trustees of the plaintiff, in continuing to maintain offices in the hospital after the transfer and in leasing out equipment owned by them to doctors using the hospital facilities, established not only a private gain to them incompatible with plaintiff's status as a public hospital but also, in substance, the control of the new institution by the controlling officers of the old. We do not agree with the trial court's conclusion, said the Supreme Court. The brief period of time during which certain doctors continued to maintain their offices in the hospital should not constitute a bar to plaintiff's subsequent claim for exemption from taxation.

Finally, the trial court held that the possibility of a future amendment of plaintiff's articles of incorporation so as to change it from a public to a private hospital supported the conclusion that plaintiff had not established its right to exemption as a public hospital. The Supreme Court said that it did not feel that the possibility that the plaintiff at some future date might amend its articles was a factor to be considered in these proceedings. Plaintiff was organized as a public hospital under the social and charitable provisions of the laws of the state. Should it attempt at some future time to change its character for the benefit of its incorporators as private individuals, it would seem that the state might properly intervene to uphold whatever right the public might have in the property of the corporation.

The order of the trial court denying plaintiff's tax exemption was accordingly reversed.—*Fairmont Community Hospital Association, Inc., v. State, 21 N. W. (2d) 243 (Minn., 1945).*

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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, May 4, page 67.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* New York, Oct. 9-14. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 21. Final date for filing application is July 1. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral, All Groups, Parts I and II.* New York, June 1947. Final date for filing application is Dec. 1. Chicago, October 1947. Final date for filing application is March 1. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II. Oral.* Chicago, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 1136 W. Sixth St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, May 22-25. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: San Francisco, June 25-26. Applications should be submitted by May 15. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit 2.

AMERICAN BOARD OF PEDIATRICS: *Oral.* San Francisco, July 1-5. Sec., Dr. Lee F. Hill, 3309 Forest Ave., Des Moines, Ia.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: New York, December. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Chicago, Nov. 27 to Dec. 1. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, Mayo Clinic, Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written. Part I.* Various centers, October. Final date for filing application is July 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia 2.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February 1947. Final date for filing application is Nov. 15. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1936 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

31:1-114 (Jan.) 1946

*Superior Vena Caval Syndrome: Report of 35 Cases. H. H. Hussey, S. Katz and W. M. Yater.—p. 1.
*Study of Prothrombin Time in Normal Subjects and in Patients with Arteriosclerosis: Preliminary Report. L. Meyers and C. A. Poindexter.—p. 27.
Normal Electrocardiograms in Cardiovascular Disease. D. Pazzanese and S. Bertacchi.—p. 33.
Certain Effects of Positive Pressure Respiration on Circulatory and Respiratory Systems. D. T. Carr and H. E. Essex.—p. 53.
Bigeminy: Electrocardiographic Study of Bigeminal Rhythms. A. E. Parsonnet, R. Miller, A. Bernstein and E. Klosk.—p. 74.
Staphylococcus Aureus Septicemia and Pericarditis Treated with Penicillin. J. J. Zimmerman and Bernice Durgin.—p. 93.
Electrocardiographic Changes Resulting from Phosphorus Poisoning: Report of Case. R. A. Dathe and D. A. Nathan.—p. 98.
Congenital Defect of Aortic Vestibule Complicated by Bacterial Endocarditis, with Perforation and Death from Cardiac Tamponade: Report of Case. L. S. Medalia and J. F. Drapiewski.—p. 103.

Superior Vena Caval Syndrome.—Hussey and his associates present 35 cases of the superior vena caval syndrome observed at the Gallinger Municipal Hospital and the Georgetown University Hospital. Aneurysm of the ascending aorta, bronchogenic carcinoma, malignant lymphoma and carcinoma with metastasis to the mediastinum are the main causes of the syndrome. Simple thrombosis of the superior vena cava is very rare. The principal symptoms and signs of the syndrome are edema and cyanosis in the upper part of the body, dyspnea and dilated veins indicative of the collateral circulation. Comparison of measurements of the venous pressure in the upper and lower extremities is the best method for establishing the diagnosis of obstruction of the superior vena cava. This may be the only practical method for recognizing that the vena cava is partially obstructed. The venous pressure in the arms is significantly higher than the femoral venous pressure. The arm-to-tongue circulation time may be normal in spite of the fact that the venous pressure is quite high. If prolonged, it is usually less than might be anticipated from the height of the venous pressure. Phlebography demonstrates that obstruction of the superior vena cava is present and, at times, localizes the point of obstruction. In 2 cases of aortic aneurysm the superior vena caval syndrome was produced by communication between the aneurysm and the superior vena cava. This condition should be suspected when the syndrome develops explosively in a patient with aneurysm of the aorta. The usual features of arteriovenous communication, such as thrill, bruit and an increase in pulse pressure, may not be present. X-ray therapy of radiosensitive mediastinal tumors may decrease obstruction of the superior vena cava. Surgical exploration of the mediastinum may be of value in cases in which lack of evidence of the cause of the obstruction holds promise of a remediable condition such as obstruction by adhesions.

Prothrombin Time in Patients with Arteriosclerosis.—Prothrombin estimations on arteriosclerotic persons were checked with the blood of a normal person as a control. Diluted and undiluted plasma determinations were checked two or three times, and the control specimen was rechecked after each series. The chief advantage of Shapiro's method is that it employs both diluted and undiluted plasma for the determination of the prothrombin time. In the diluted determinations a 1:8 saline solution of plasma is used. The diluted prothrombin time has revealed changes in patients with coronary arteriosclerosis that have not been demonstrated by the ordinary undiluted method. This may be due, Shapiro states, to an anticoagulant factor in undiluted plasma which is inactivated by dilution. In diurnal studies of the prothrombin time there is a tendency toward shortening in the diluted fraction in the late hours of the night and in the early morning in patients with coronary arteriosclerosis. There is no significant change in normal males. Exercise apparently had no effect on the prothrombin times of the small group of arteriosclerotic patients tested. Patients with coronary sclerosis and anginal syndrome do not show any especial alterations of the prothrombin time. After the acute phase of coronary occlusion there is noted a trend toward shortening of the dilute prothrombin time, which continues for several weeks during the period of infarction.

American Journal of Clinical Pathology, Baltimore

15:555-628 (Dec.) 1945

*Plumbism: Punctate Basophilia in Bone Marrow. E. R. Movitt.—p. 557.
Quantitative Estimation of Prothrombin. A. J. Quick.—p. 560.
*Melioidosis. C. D. Cox and J. L. Arbogast.—p. 567.
Study of 377 Cases of Fatal Meningitis, with Special Reference to Bacteriologic Diagnosis. A. J. Hertzog.—p. 571.
Method of Demonstrating Anti-Rh Agglutinins in Cases of Erythroblastosis Fetalis. B. B. Carter and J. Loughrey.—p. 575.
Hemolytic Disease of Newborn in Relation to Rh Factor. M. V. de Torregrosa and A. Ortiz.—p. 577.
Salmonella Problem: Practical Laboratory Applications of Recent Advances. O. Felsenfeld.—p. 584.
Aneurysm of Splenic Artery with Rupture: Case Report. S. R. Pinas.—p. 609.
Comments by Members of Committee on Tests for Intoxication of National Safety Council on Blood Alcohol and Intoxication: Its Value in Borderline Cases. A. O. Gettler, W. Freireich and H. Schwartz.—p. 613.
Answers to Comments by Members of Committee on Tests for Intoxication. A. O. Gettler.—p. 618.

Plumbism: Punctate Basophilia in Bone Marrow.—Movitt points out that the demonstration of basophilic stippling is particularly important in the diagnosis of plumbism when proper facilities for lead determination in body fluids are not available. Punctate basophilia frequently cannot be found in the peripheral blood to a significant extent but may be seen in abundance in the bone marrow.

Melioidosis.—Cox and Arbogast present what they consider to be the first case of melioidosis in the Army of the United States. An American Indian soldier aged 27 was admitted to a hospital in Burma with a history of headache, fever, chills, nausea and vomiting for twenty-four hours before admission. The patient was acutely ill, with a temperature of 102.4 F., pulse rate 86 and respiratory rate 18. The liver and spleen were palpable 2 fingerbreadths below the costal margin. Repeated malarial smears failed to demonstrate parasites. During the next few days, scattered pustules appeared over the entire body involving especially the face, chest, abdomen, arms and legs, except the palms and soles. Some of the lesions became crusted. The fever was septic in type. A diagnosis of smallpox was considered. The liver and spleen remained palpable, and moderate abdominal distention developed. On the fifth day the patient became irrational, and signs of pneumonic consolidation were present at the left base. The clinical diagnosis at the time of death was generalized septicemia, etiology undetermined. Premortem cultures from skin pustules and blood and postmortem cultures from pulmonary abscesses, blood, liver and spleen were identified as Malleomyces pseudomallei. The organism was a short gram-negative bacillus showing bipolar staining even by means of Gram's stain. The cells had the characteristic "closed safety pin" appearance. Motility was present and could be demonstrated by both the hanging drop and semisolid agar methods.

Archives of Physical Medicine, Chicago

27:1-56 (Jan.) 1946

Psychosomatic Concepts in Physical Medicine. Barbara Goldberger and J. Goldberger.—p. 5.
Physical Therapy and Reconditioning Therapy at Fitzsimons General Hospital, Denver. O. L. Huddleston.—p. 11.
Pulley Exercises to Increase Joint Movement. G. G. Deaver and K. J. Peterson.—p. 17.
Ultraviolet Blood Irradiation Therapy of Apparently Intractable Bronchial Asthma. G. P. Miley, R. E. Seidel and J. A. Christensen.—p. 24.
Preventive Measures in Plaster Cast Application. A. M. Pruce.—p. 30.
Muscle and Joint Examination Charts. S. T. Snedecor.—p. 33.

Arizona Medicine, Phoenix

2:343-400 (Nov.) 1945

Significance of Some of Fundamental Physical Findings in Examination of Heart. J. A. Greene.—p. 363.
Continuous Caudal Obstetric Analgesia. R. J. Barfoot.—p. 366.
Rh Hazards in General Practice. W. H. Oatway Jr.—p. 370.

Bulletin New York Academy of Medicine, New York

22:1-54 (Jan.) 1946

Contributions of War Effort to Medicine. C. P. Rhoads.—p. 3.
Modern Concepts of War Neuroses. W. C. Menninger.—p. 7.
What Can the Practitioner Do in Treating Neuroses? T. A. C. Rennie. —p. 23.
Evaluation of Early Postoperative Activity. J. H. Powers.—p. 38.

22:55-112 (Feb.) 1946

Physiopathology and Surgical Treatment of Congenital Cardiovascular Defects. A. Blalock.—p. 57.
Treatment of Aneurysms and Arteriovenous Fistulas. D. C. Elkin. —p. 81.
Hormonal Treatment of Prostatic Malignancy. C. L. Deming.—p. 88.
New Absorbable Hemostatic Agents. Virginia K. Frantz.—p. 102.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

5:123-244 (Feb.) 1946

Treatment of Aneurysms and Arteriovenous Fistulas. D. C. Elkin. —p. 157.
Clinical Survey of 86 Cases of Scrub Typhus. C. M. Agress and E. R. Evans.—p. 163.
Rorschach Test in Differential Diagnosis of Cerebral Concussion and Psychoneurosis. S. A. Koff.—p. 170.
Transportation of Patients with Fracture of Femur. N. C. Mead. —p. 174.
Reconditioning Program in Station Hospital. F. Rathauser and H. Ulfelder.—p. 178.
Responsibilities of Medical Supply Officer. A. Pappas.—p. 185.
Blood Groups in Air Forces Basic Trainees. H. F. Kesinger.—p. 187.
Diagnosis of Acute Coccidioides Immitis Infections. C. B. Cherry and A. G. Bartlett.—p. 190.
Treatment of Hysteria in Forward Echelon. G. L. Wadsworth and O. Rath.—p. 193.
Trench Foot: Prognosis and Disposition. E. C. Toone and J. P. Williams.—p. 198.
Closed Ward Psychiatric Reconditioning. L. Barbato.—p. 210.

Cancer Research, Baltimore

6:49-96 (Feb.) 1946

Social Distribution of Cancer of Scrotum and Cancer of Penis. E. L. Kennaway and N. M. Kennaway.—p. 49.
Calcium and Potassium Content of Secretions from Noncancerous and Cancerous Stomachs. Lucia J. Dunham and A. Brunschwig.—p. 54.
Demonstration of Enzyme Inhibiting Factor in Serum of Cancer Patients: Preliminary Study. G. Duboff and S. Hirshfeld.—p. 57.
Respective Roles of Longevity and Genetic Specificity in Occurrence of Spontaneous Tumors in Hybrids Between Two Inbred Lines of Rats. W. F. Dunning and M. R. Curtis.—p. 61.
*Growth of Mammalian Tumors in Fertile Eggs: Is Filtrable Cancer Virus Produced? G. H. Twombly and Doris Meisel.—p. 82.

Growth of Mammalian Tumors in Fertile Eggs.—Twombly and Meisel incubated fertile white leghorn eggs for five days at 38.5 C. and then inoculated the eggs with 0.5 cc. of a sterile tumor emulsion. The inoculated eggs were then incubated again. Rat sarcoma R39, Bagg mouse carcinoma 755 and the RC mouse carcinoma of Taylor have been grown successfully in these eggs. The mortality of such eggs has been high, 73 per cent by the seventeenth day of inoculation, making this method a poor one for the routine growth of tumor tissue. The yolk from eggs bearing the rat sarcoma R39 did not produce sarcomas when injected into susceptible rats save in 1 instance in which the centrifuged sediment of the yolk was effective. Injection of the yolk did not confer immunity on young rats so treated. Yolk from eggs bearing either of the two mouse mammary carcinomas frequently reproduced the tumor when injected into susceptible mice. Repeated attempts to filter the tumor agent through Berkefeld N or V candles were unsuccessful.

Hawaii Medical Journal, Honolulu

5:117-176 (Jan.-Feb.) 1946

Tracheotomy in Leprosy. N. R. Sloan.—p. 125.
Pellagra: Report of 2 Cases. H. M. Patterson.—p. 129.
Cold Agglutinins in Virus Type Pneumonia. E. A. Fennel.—p. 132.
Penicillin Therapy in Purulent Maxillary Sinusitis. H. E. Crawford. —p. 135.

Journal of Allergy, St. Louis

17:1-52 (Jan.) 1946

Studies on Poison Ivy and Other Dermatitis-Producing Plant Parts Wherein Active, Resinous Principles are Suspended in Aqueous Solution. Margaret B. Strauss and W. C. Spain.—p. 1.
*Study of Inheritance of Respiratory Allergies. K. A. Stiles and Elizabeth J. Johnston.—p. 11.
*Allergic Reaction Following Typhus Fever Vaccine and Yellow Fever Vaccine Due to Egg Yolk Sensitivity. S. S. Rubin.—p. 21.
Anaphylactic Shock from Skin Testing in 2 Cases, 1 Fatal. O. Swineford Jr.—p. 24.
Bronchial Asthma: Critical Review. L. Tuft.—p. 27.

Inheritance of Respiratory Allergies.—Stiles and Johnston report familial atopy in a family of five generations. This family of 232 persons has been studied with regard to the inheritance of respiratory allergies, namely asthma, hay fever and bronchial disorders. The incidence of respiratory allergies was 22.4 per cent, in contrast to approximately 7 per cent in the general population. The authors think that, in studying the inheritance of atopy, perfect mendelian ratios are not likely to be obtained, owing to the complexity of both environmental and hereditary factors involved. The specific sensitivity does not appear to be inherited but rather the capacity or the predisposition to become hypersensitive. The manifestations of the symptoms are influenced by many factors and their interactions, including presence of the atopen, climate, degree of inheritance, age and sex. The reported data suggest that respiratory allergy may be interpreted as an irregular dominant character. The gene exhibits low penetrance with variable expressivity.

Allergic Reaction Following Typhus and Yellow Fever Vaccination Due to Egg Yolk Sensitivity.—Rubin reports that allergic manifestations of angioneurotic edema, nasal blockage and tightness in the chest developed in a soldier aged 19 shortly after he received yellow fever vaccine prepared from infected chick embryos and typhus vaccine prepared from infected yolk sacs. The patient had a history of spring and fall hay fever for the past eight years and sensitivity to egg yolks since childhood. Tolerance for egg white and hypersensitivity to egg yolks was corroborated by cutaneous tests showing that egg yolk sensitivity may exist alone without concomitant egg white sensitivity. The author points out that persons sensitive to egg or chicken may develop allergic manifestations from virus or rickettsial vaccines which are grown on egg yolk sacs or chick embryos.

Journal of Clin. Endocrinology, Springfield, Ill.

6:1-116 (Jan.) 1946

*Thiouracil Treatment of Thyrotoxicosis: I. Results of Prolonged Treatment. R. H. Williams.—p. 1.
*Id.: II. Toxic Reactions. R. H. Williams, H. M. Clute, T. J. Anglem and F. R. Kenney.—p. 23.
Urinary 17-Ketosteroids in Metabolism: II. Partition of Gonadal and Adrenocortical Hormonal Derivatives of Normal, Endocrine and Cancerous Patients. W. T. Salter, R. L. Cahen and T. S. Sappington, with technical assistance of Gretchen Sappington.—p. 52.
Degenerative Changes in Cerebral Arteries Following Administration of Desoxycorticosterone Acetate. F. M. Forster, A. Cantarow, P. A. Herbut, K. E. Paschkis and A. E. Rakoff.—p. 77.
*Methyl Testosterone and Surgical Castration in Treatment of Carcinoma of Breast. W. P. Boger.—p. 88.
Effect of Administration of Estrogens on Production of Cervical Mucus in Castrated Women. W. T. Pommerenke and Ellen Mae Viergiver. —p. 99.

Prolonged Treatment with Thiouracil.—Williams says that during the last two and a half years thiouracil has been used at his clinic at Harvard Medical School in the treatment of 247 patients with thyrotoxicosis. All patients experienced a remission of the disease, which was maintained for as long as treatment was continued. Thyroidectomy was done on 121 patients, 3 having a two stage operation. Thyrotoxic reactions were less before, during and immediately after the operation than shown by comparable patients treated with iodide, but there was greater vascularity and friability of the thiouracilized glands. The combined administration of iodide and thiouracil gave the best results. Ninety-five of these patients have been examined one or more times during intervals of from three to eighteen months, 85 exhibited no evidence of thyrotoxicosis and no complications from the thyroidectomy, 5 exhibited a persistence of thyrotoxicosis and 2 had a recurrence. Two

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patients developed a paralysis of one vocal cord, 2 were found to have tetany and 1 became myxedematous. The treatment of 100 patients, most of whom were given thiouracil for many months, was discontinued. Forty-nine of these patients have gone without treatment for intervals of from three to twenty-one months, and none have experienced a relapse. Fifty-one patients exhibited a relapse of the disease within two weeks to five months. On cessation of therapy sustained remissions of the thyrotoxicosis were more apt to occur the longer the thiouracil had been given, when there was only slight enlargement of the thyroid gland, in subjects with slight increase in the basal metabolic rate and when the patients were females. About two thirds of 69 patients who were treated for eight months or longer exhibited a decrease in the size of the thyroid gland; a few glands increased in size.

Toxic Reactions of Thiouracil.—Williams and his associates report the toxic reactions encountered in 247 patients who were treated with thiouracil. Thirty-six, or 14.5 per cent, had such reactions. In 13 patients the leukocyte count decreased to 3,800 or below, and 3 others developed agranulocytosis. There were febrile reactions in 7, maculopapular eruptions in 6, edema of the legs in 6, urticaria in 5, neuritis in 5, arthritis in 2 and enlargement of the submaxillary salivary glands in 1. There was a rare complaint of headache, nausea, vomiting and diarrhea. In 18 patients, 7.2 per cent, it was necessary to discontinue thiouracil therapy because of reactions to this drug. In 2 additional instances, each with urticaria, cessation of treatment was regarded as advisable although perhaps not compulsory. All the patients in this series recovered from the toxic reactions. Each of the 3 patients with agranulocytosis not only recovered from this reaction but have gone for intervals of from eight to twenty months free from thyrotoxicosis in spite of no treatment. The routine administration of special capsules of liver powder containing more folic acid than usual did not afford protection against the development of toxic reactions. Unnecessarily large doses of thiouracil and long interrupted intervals of treatment tend to increase the frequency and severity of toxic reactions.

Methyl Testosterone and Surgical Castration in Carcinoma of Breast.—Boger employed surgical castration and concomitant administration of methyl testosterone in the treatment of a woman aged 27 with extensive carcinoma of the breast. She was given 1,440 mg. of methyl testosterone over a period of eight months after the surgical castration. The patient was bedridden when the therapy was instituted, and within two weeks thereafter she was ambulatory and free from pain. Extensive osteolytic metastases in the spine and pelvis were partially recalcified within six weeks. The patient died approximately one year after treatment was begun, but she was given eight months of useful living before her condition began to deteriorate.

Journal of the Mount Sinai Hospital, New York

12:959-1020 (Jan.-Feb.) 1946

Edward Gamaliel Janeway Lectures: I. Vitamin K, Its Discovery, Biochemistry and Application in Medicine. H. Dam.—p. 961.
Visceral Manifestations of Kaposi's Sarcoma. D. Stats.—p. 971.
*Effect of Weight Reduction on Course of Arterial Hypertension. D. Adlersberg, H. R. Coler and J. Laval.—p. 984.
Cancer of Lung in Presence of Pulmonary Tuberculosis: Report of 2 Cases. H. Hennell.—p. 993.
Anterior Mediastinal Neoplasm with Unusual X-Ray Appearance. C. B. Rabin.—p. 996.
Cylindroma of Bronchus: Pneumonectomy; Peripheral Carcinoma of Lung; Lobectomy and Chest Wall Resection. H. Neuhof.—p. 1000.
Essays on Biology of Disease: Chapter 11, Arteriosclerosis. E. Moschcowitz.—p. 1003.

Weight Reduction and Arterial Hypertension.—Adlersberg and his associates of the Nutrition Clinic of the Mount Sinai Hospital studied the effects of weight reduction on the course of arterial hypertension in a group of 54 patients. The average course of dietary treatment was 8.2 months; the average loss of weight during this period was 23½ pounds (10.6 Kg.). The loss of weight was associated with a decreased blood pressure in 72 per cent and with no change of blood pressure in 28 per cent of the cases. Fifteen patients of the original group were reexamined in 1944. The course of arterial hypertension was more favorable in those who maintained their weights at reduced levels than in those who increased in weight during the three year interval. Loss of weight and the return of blood pressure to lower or normal levels had practically no effect on the vascular changes of the fundi.

Journal of Nervous and Mental Disease, New York

103:1-106 (Jan.) 1946

Hemiatrophy of Body in Adult Life. N. Reider and G. S. Player.—p. 1.
Unusual Involvement of Nervous System in Generalized Lymphoblastoma. H. Kohut.—p. 9.
Is the Epileptic a Safe Motor Vehicle Driver? With Some Remarks Relative to Clinical Application of the Electroencephalogram. M. A. Glaser and M. Irons.—p. 21.
Study of Case of Pseudo Deaf-Muteness ("Psychic Deafness"). Erika Oppenheimer Fromm.—p. 37.
*Relationship of Vegetative Nervous System to Angina Pectoris (Abdominalis). L. Hess.—p. 60.
Classification of Anxiety Reactions (Anxiety States). J. M. Schneck.—p. 81.

The Vegetative Nervous System and Angina Pectoris (Abdominalis).—Hess reviewed the anatomic findings outside the chest of patients who died following attacks of angina or coronary occlusions. In the first group of patients, in whom the syndrome of angina abdominalis was recognized during clinical observation, necropsies revealed anatomic changes in the coronary arteries, secondary involvement of the myocardium (recent or old myomalacia) or myocardial aneurysm, in some cases syphilitic aortitis in addition to the coronary disease and, finally, ulcers in the esophagus, stomach or duodenum. The author thinks that in a second group of patients, in whom coronary disease and gastrointestinal hemorrhages coincided, the syndrome under discussion was in its early stages. In a third group coronary disease was found to be associated with old ulcers. The author considers four possibilities in explanation of the anatomic findings: 1. The coincidence of the cardiovascular signs and of ulcers is incidental. 2. The ulcers are dependent on the condition of the coronary arteries. 3. The ulcers are dependent on a generalized disease of arteries (sclerosis, syphilis), as are changes of coronary arteries. 4. The coronary disease (bouts of angina pectoris, thrombosis of the coronary artery) and the ulcers are dependent on one common cause. Involvement of the vagus plays a certain part, and the primary site of the anginal attack may be located in the center of the vegetative nerves.

J. Neuropathology and Exper. Neurology, Baltimore

5:1-84 (Jan.) 1946

*Reinnervation of Paretic Muscles by Use of Their Residual Nerve Supply. H. E. Billig, A. van Harreveld and C. A. G. Wiersma.—p. 1.
Effects of Local Applications of Acetylcholine to Acoustic Cortex. F. M. Forster and R. H. McCarter.—P. 24.
Cortical Cerebellar Atrophy Without Ataxia: II. Primary Circumscribed Variety. B. W. Lichtenstein and S. A. Levinson.—p. 29.
Angiomatous Malformation of Sylvian Aqueduct, with Remarks on Management of Aqueductal Obstructions. C. Graf.—p. 43.
Terminal Degeneration Within Central Nervous System as Studied by New Silver Method. P. Glees.—p. 54.
Effect of Extirpation of Parastriate Cortex on Learned Visual Discriminations in Monkeys. H. W. Ades.—p. 60.
Neurinoma of Twelfth Nerve. E. Haase.—p. 66.
Pyramidal Tract: Representation of Lateral Corticospinal Component in Spinal Cord of Cat. A. M. Lassek.—p. 72.
Olivopontocerebellar Atrophy in Cat. J. W. Schut.—p. 77.

Reinnervation of Paretic Muscles.—Billig and his associates studied the effect of axon branching on the power of muscles of patients with residual paresis resulting from poliomyelitis. The procedures applied were calculated to cause axon branching of the motor fibers which have escaped destruction in order to innervate with the extra branches muscle fibers which lost their nerve supply. Since fiber redistribution was to be eliminated as much as possible, the motor nerve was interrupted as close to the individual muscles as feasible. Two methods were used: the crushing of the motor nerve after its surgical exposure (surgical method) and the severing of the intramuscular nerve structures by a forceful massage of the muscle (manual method). A total of 923 leg muscles and of 251 arm muscles were treated with the surgical method; 1,429 leg muscles and 702 arm muscles were treated manually. The result of the surgical treatment was a definite improvement of the muscles with a low initial rating. The muscles with a high initial rating showed a mean loss of muscle power. The

application of the surgical method should remain restricted to the muscles of an initial rating lower than "poor." The manual treatment produced a similar mean improvement of the muscle power, but it was not restricted to the muscles of low initial rating. The manual treatment thus can be applied to all paretic muscles. It was found in the surgical series that the improvements in the arm muscles were greater than those in the muscles of the leg. In the manual series the benefit was the greatest in the leg. Nontreated control muscles showed only the slightest changes in muscle power during the period of observation. No distinct influence of the duration of the paretic state (which was always longer than one year) was observed, nor was a significant influence of the patient's age noted. The effect of the manual treatment has reached its maximum after about one year. There is evidence that the surgically treated muscles still improve after that period. A repetition of the manual treatment after a preceding surgical or manual treatment increased the mean muscle rating only slightly, if at all. Paralleling the increase in muscle power, an increase in the size of the action potentials was observed.

Journal Pharmacology & Exper. Therap., Baltimore

86:1-100 (Jan.) 1946. **Partial Index**

*Effect of Various Drugs on Experimental Asthma Produced in Guinea Pigs by Exposure to Atomized Histamine. E. R. Loew, Margaret E. Kaiser and V. Moore.—p. 1.
Cutaneous Vasodilating Action of Pitressin. R. A. Woodbury and R. P. Ahlquist.—p. 14.
Pharmacologic Studies on Streptothricin. H. J. Robinson, O. E. Graessle, Mary Gundel and R. H. Silber.—p. 22.
Chronic Toxicity of Sulfites. O. G. Fitzhugh, Lila F. Knudsen and A. A. Nelson.—p. 37.
Action of Picrotoxin and of Niketamide (Diethylamide of Pyridine-3-Carboxylic Acid) on Neuromuscular Conductivity. F. Huidobro and J. Jordon.—p. 49.
Action of Erythrophleum Alkaloids on Isolated Mammalian Heart. Harriet M. Maling and O. Krayer.—p. 66.
Influence of Epinephrine and Atropine on Pulmonary Pressor Action of Histamine. R. A. Woodbury.—p. 79.
Certain Inhibitory Properties Possessed by Homologous Series of p-n-Alkyloxyphenylethylamines. W. A. Broom and E. J. Wayne.—p. 83.

Effects of Drugs on Asthma Produced by Histamine.—Loew and his associates have published data indicating that benhydryl alkamine ethers and other antihistamine agents are effective in reducing the severity of bronchoconstriction following exposure of guinea pigs to atomized histamine solutions. It is important to determine whether the drugs found to be effective are limited to those employed clinically by virtue of their recognized efficacy in bronchial asthma and to those which possess a demonstrable antihistamine or antispasmodic action. A comparison was made of the effectiveness of bronchodilator drugs, uterine and gastrointestinal antispasmodics, and other types of drugs in experimental asthma induced with atomized histamine. The authors found that trasentin, pavatrine and syntropan failed to alleviate experimental asthma induced by histamine. Effective antispasmodic drugs in order of decreasing potency were epinephrine, benadryl, isonipecaine, atropine, papaverine and aminophylline. Bronchoconstriction referable to inhalation of histamine was not diminished by ergotamine tartrate, the local anesthetics procaine and nupercaine, or by respiratory depressants such as morphine and pentobarbital. Physostigmine and ephedrine increased the severity of the experimental asthma. The failure of procaine and nupercaine to decrease histamine shock is of experimental interest because procaine is frequently used as a local anesthetic when intravenous injections are made in experiments dealing with histamine and anaphylactic shock.

Medical Annals of District of Columbia, Washington

15:1-54 (Jan.) 1946

Syndrome of Premature Ventricular Excitation in Which PR Interval is Short and QRS Complex is Prolonged (Wolff-Parkinson-White Syndrome): Report of 4 Cases. J. M. Barker.—p. 1.
Toxicity and Potential Dangers of DDT to Humans and Warm Blooded Animals. P. A. Neal and W. F. von Oettingen.—p. 15.
Study to Determine the Antibacterial Efficiency of Combined Tyrothricin and Sulfadiazine. R. Kelso and B. Thompson.—p. 20.
Successful Use of Oral Penicillin in Treatment of Subacute Bacterial Endocarditis: Report of Case. F. G. Burke, S. Ross, B. J. Walsh and P. A. McLendon.—p. 22.

New England Journal of Medicine, Boston

234:103-136 (Jan. 24) 1946

Hodgkin's Disease: VII. Treatment and Prognosis. H. Jackson Jr. and F. Parker Jr.—p. 103.
Wolff-Parkinson-White Syndrome. N. H. Boyer.—p. 111.
Syncope in Blood Donors. W. C. Moloney, L. R. Lonnergan and J. K. McClintock.—p. 114.
*Electroencephalographic Studies in Diabetes Mellitus. M. Greenblatt, J. Murray and H. F. Root.—p. 119.
Symposium on Medical Sociology: Medical Economics. N. Sinai.—p. 122.
Parathyroid Adenoma.—p. 125.
Ewing's Sarcoma of Pubis.—p. 127.

Electroencephalographic Studies in Diabetes Mellitus.—In a study of 40 patients with uncomplicated diabetes Greenblatt and his associates found that the incidence of cerebral dysrhythmia as evidenced by abnormal electroencephalograms is not increased over that in normal persons. Long duration of diabetes does not alter the incidence of cerebral dysrhythmia. Administration of insulin over long periods has no apparent effect on the electroencephalograms. Fifty-one per cent of diabetic patients with frequent severe insulin reactions were found to have abnormal electroencephalograms. Thus the electroencephalograms are of aid in the evaluation of the stability of cortical function in diabetic patients with such reactions.

New York State Journal of Medicine, New York

46:113-224 (Jan. 15) 1946

Effective Control Program for Rabies. R. H. Broad and A. Zeissig.—p. 167.
Possibility of Exterminating Mammary Carcinoma in Mice by Simple Preventive Measure: Its Practical Implication for Human Pathology. L. Gross.—p. 172.
Thrombophlebitis and Phlebothrombosis. L. L. Hobler.—p. 177.
Destructive Granuloma of Bone in Skull. M. I. Salomon and C. L. Engelsher.—p. 183.
Extreme Case of Alkalosis, with Necropsy Findings. A. A. Fischl and Irene Garrow.—p. 184.

46:225-336 (Feb. 1) 1946

Observations Made During Poliomyelitis Epidemic in 1944 in Hornell State Health District, New York. J. A. Conway and D. E. Bigwood Jr.—p. 275.
Diagnosis and Management of Certain Tropical Diseases in Returning Veterans. W. Kaufmann.—p. 290.
Review of Various Methods Used in Treatment of Phlebothrombosis of Extremities. F. W. Bancroft.—p. 299.
Group Practice. E. C. Foster and J. A. Hatch.—p. 306.
Functions of a Blood Bank. S. M. Bouton Jr.—p. 311.
Artificial Pneumoperitoneum by Cul De Sac Puncture: New Technic for Pelvic Pneumograms. A. Decker.—p. 314.
Radiologic Diagnosis of Ectopic Pregnancy. R. H. Marshak.—p. 317.

46:337-448 (Feb. 15) 1946

Rh Factor in Pregnancy and Isohemolytic Disease. R. J. Pieri and R. C. Schwartz.—p. 387.
Comments on War Neuroses. N. A. Levy.—p. 395.
Colloidal Sulfur: Some Pharmacodynamic Considerations and Their Therapeutic Application in Seborrheic Dermatoses. F. C. Combes.—p. 401.
Objectors to Electric Shock Treatment Are Refractory to Its Therapy. H. L. Gordon.—p. 407.
Management of Varicose Ulcers. L. K. Stalker.—p. 411.
Duodenal Obstruction Caused by Chronic Pyelonephritis and Hydronephrosis. B. Sherwin and E. E. Rockey.—p. 414.
Occlusion of Aortic Bifurcation, with Theoretical Considerations Regarding Production of Signs and Symptoms in 2 Cases. E. E. Santemma.—p. 416.

North Carolina Medical Journal, Winston-Salem

7:1-44 (Jan.) 1946

Suggested Plan for Statewide Voluntary Health Insurance. V. K. Hart.—p. 1.
Practical Use of Digitalis. R. A. Broome Jr. and E. S. Orgain.—p. 3.
Meningitis Due to Hemophilus Influenzae: Report of Case Treated with Sulfadiazine, Streptomycin and Antiserum, with Recovery. L. J. Butler, Martha Dukes Yow and J. B. Reinhart.—p. 8.
Cervical Ribs and Scalenus Anticus Syndrome: Review of Literature and Report of Case. J. F. Patterson Jr.—p. 13.
Antimycotic Effect of Diethylstilbestrol. F. K. Harder.—p. 20.

7:45-92 (Feb.) 1946

Richard Henry Whitehead. W. deB. MacNider.—p. 45.
Pathogenesis of Toxemias of Late Pregnancy. J. K. Aikawa.—p. 46.
Incarceration of Meckel's Diverticulum in Femoral Hernia: Report of Case. F. M. Simmons Patterson.—p. 59.
Cardiac Glycosides. R. A. Broome Jr. and E. S. Orgain.—p. 61.
Analysis of 3,701 Admissions to United States Public Health Service Medical Center in Durham, N. C., H. L. Holley and G. Fein.—p. 65.

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Northwest Medicine, Seattle

45:1-72 (Jan.) 1946

Mediterranean Anemia: Report of Case in Negro. M. H. Stiles, C. H. Manlove and C. D. Dangerfield.—p. 23.
Narcosynthesis Under Sodium Amytal: Adjunct to Psychiatric Diagnosis and Treatment. T. M. Barber.—p. 27.
Treatment of Supracondylar Fractures of Humerus in Childhood. J. F. LeCocq and I. Slade.—p. 30.
Disability Evaluation of Injured Extremity. W. C. Smith.—p. 33.
Intrasternal Route in Acute Circulatory Failure. D. M. Green.—p. 38.
Extrauterine Pregnancy: Five Year Study. A. F. Lee.—p. 40.

45:73-144 (Feb.) 1946

Hepatic Abscess Secondary to Perforated Duodenal Ulcer. M. G. Beaver, P. B. Davis and R. S. Smith.—p. 94.
Primary Carcinoma of Liver in Infants and Children. M. S. Rosenblatt and J. A. May.—p. 96.
Results of Four Years of Tuberculosis Screening by Selective Service and Armed Forces Induction Station. R. E. Purvine and H. M. Erickson.—p. 98.
Short PR Interval Syndrome. M. Scarf and C. W. Coffen.—p. 100.
Symptoms Developed in Workers Cutting and Welding Galvanized Iron. T. E. P. Gocher.—p. 102.
Disability Evaluation of Injured Extremity. W. C. Smith.—p. 104.

Occupational Medicine, Chicago

1:1-98 (Jan.) 1946

Physical Capacity for Work: Principles of Industrial Physiology and Psychology Related to Evaluation of Working Capacity of the Physically Impaired. V. K. Harvey and E. P. Luongo.—p. 1.
*Spontaneous Coma Due to Hypoglycemia in Undernourished Persons. H. Gounelle and J. Marche.—p. 48.
Group Psychotherapy for Neuropsychiatric Patients Being Discharged from the Army. J. J. Michaels and E. O. Milton.—p. 60.
Latent Neurologic Manifestations Following Decompression: Report of Case of Severe Reaction Following Ascent to 38,000 Feet. D. W. Lund, J. H. Lawrence and L. B. Lawrence.—p. 75.
*Penicillin Lozenges in Treatment of Oral Infections. R. O. Levitt and W. W. Leathen.—p. 81.

Hypoglycemia in Undernourished Persons.—Gounelle and Marche observed spontaneous hypoglycemia among persons subjected to prolonged undernourishment in France during the years 1941 and 1942. Of interest is the occurrence of spontaneous hypoglycemia in persons whose diets were deficient in proteins and fats and not in carbohydrates. Apparently deficiency of protein and fat causes hypoglycemia, just as it causes edema. In most of the cases there is a characteristic clinical picture associated with complete coma: disturbances of respiration, muscle spasms and a bilateral Babinski sign. Special note is made of the frequent absence of convulsions and perspiration, the opposite of what is generally observed in coma caused by hypoglycemia with hyperinsulinism. Examination of the blood reveals a fall in blood sugar generally to below 0.4 Gm. in a liter. There is a moderate excess of nitrogen in the blood (around 1 Gm.); the two disturbances seem to be associated. Diagnosis of these attacks is often confused with meningeal hemorrhage. Therapy should be instituted immediately in the form of intravenous injection of hypertonic dextrose solution (minimum 40 cc. of a 30 per cent solution). When successful, a return to consciousness is noted as soon as the injection is finished. Some irreversible cases exist in which all therapy fails. After consciousness is regained, sugar syrup should be given by mouth and dextrose solution hypodermically. A diet rich in fats and protein should be given for a long period because the blood sugar often remains low for weeks and recurrence of the disease is frequent. Anatomic study of nutritional spontaneous hypoglycemia revealed atrophy of the glandular part of the hypophysis and lesions of the diencephalon. There are apparently two factors associated in producing this syndrome: an unbalanced diet, particularly a deficiency of fat and protein, and an endocrine deficiency acting on the system causing hyperglycemia (hypophysis, adrenals, thyroid) secondary to the nutritional deficiency.

Penicillin Lozenges in Oral Infections.—One hundred and seventeen patients of the armed forces with acute infection of the nasopharynx and tonsils were treated with penicillin lozenges of 500 units strength each. The lozenge was made of acacia and penicillin in the required dosage and included powdered sugar and peppermint as flavoring agents. The patients were warned not to chew or suck the lozenge but to permit it to dissolve. Of these 117 patients, cures were produced rapidly in 110 (94.2 per cent). Hospital days were fewer for patients treated with penicillin than for those receiving nonspecific treatment. Eighty-seven patients were successfully treated on an outpatient status, thereby saving many hospital beds and man hours for effective duty. Vincent's infections of the mouth are successfully treated with penicillin lozenges. Penicillin locally appears to have no effect on deep tonsillar infections.

Oklahoma State Medical Assn. Jour., Oklahoma City

39:1-54 (Jan.) 1946

Hemorrhage and Shock in Obstetrics. E. N. Smith.—p. 1.
Chronic Sinusitis: Safe Management and Treatment. J. M. McMillan. —p. 9.

39:55-100 (Feb.) 1946

Occupational Dermatitis. C. Brundage.—p. 55.
Pathologic Aspects of Certain Surgical Diseases of Stomach and Duodenum. C. Donovan.—p. 58.
Surgical Treatment of Intestinal Obstruction: Preoperative Preparation. J. H. Robinson.—p. 61.

Psychoanalytic Quarterly, Albany, N. Y.

15:1-138 (Jan.) 1946

The Function of Drawings and Meaning of the "Creative Spell" in a Schizophrenic Artist. E. Pappenheim and E. Kris.—p. 6.
Telepathy and Problems of Psychoanalysis. J. Eisenbud.—p. 32.
Psychoanalysis and History: The Nibelungs and the Bible. F. Wittels. —p. 88.

Psychosomatic Medicine, Baltimore

8:1-74 (Jan.-Feb.) 1946

Stress Tolerance Test: Preliminary Experiments with New Projective Technic Utilizing Both Meaningful and Meaningless Stimuli. M. R. Harrower and R. R. Grinker.—p. 3.
Study of Conditioned Vasomotor Responses in 10 Human Subjects. L. A. Gottschalk.—p. 16.
Narcolepsy as Psychogenic Symptom. L. A. Spiegel.—p. 28.
*Analysis of Influence of Alcohol on Experimental Neuroses in Cats. J. H. Masserman.—p. 36.

Influence of Alcohol on Experimental Neuroses in Cats.—Twenty-one cats were taught first to obtain food by opening a box, then to respond to various conditional signals and finally to solve difficult problems involving the passage of barriers and the manipulation of switches to secure their reward. Masserman and Yum observed that alcoholic intoxication in the cats disintegrated the adaptive patterns to a varying degree, particularly those that were most complex and most recently learned. Normal animals, however, showed complete restitution of function on recovery from intoxication, little habituation to alcohol, and no signs of developing a preference for the drug. The animals were subjected to special experimental procedures that induced and reinforced motivational conflicts between hunger and fear. Under such circumstances they developed "experimental neuroses," characterized by pervasive inhibitions of normal goal responses, hypersensitivities and aversions to stimuli associated with the conflictful field, loss of group dominance, and persistent aberrations of somatic and motor function. The administration of small doses of alcohol again disintegrated these relatively complex "neurotic" patterns and permitted relatively simple goal oriented responses to supervene. A significant number of cats repeatedly experiencing such relief from neurotic tensions developed a preference for alcoholic drinks, i. e. showed evidences of addiction to alcohol. However, as their re-exploratory behavior while mildly intoxicated partially resolved conflicts, this addiction diminished until nearly normal food choices were restored.

Public Health Reports, Washington, D. C.

61:129-156 (Feb. 1) 1946

Preparation of Slides for Measurement of Dust Particle Size. W. E. McCormick.—p. 129.
Composition of Some Trade Name Solvents Used for Cleaning and Degreasing, and for Thinning Paints. A. D. Brandt, W. J. McConnell and R. H. Flinn.—p. 132.

61:157-202 (Feb. 8) 1946

Influence of p_H and Temperature on Survival of Coliforms and Enteric Pathogens when Exposed to Chloramine. C. T. Butterfield and Elsie Wattie.—p. 157.

61:203-250 (Feb. 15) 1946

Diphtheria Incidence and Trends in Relation to Artificial Immunization, with Some Comparative Data for Scarlet Fever. S. D. Collins.—p. 203.

Review of Gastroenterology, New York

13:1-76 (Jan.-Feb.) 1946

Recovery from Botulism Coma Following Ultraviolet Blood Irradiation: Knott Technic. G. P. Miley.—p. 17.
Evaluation of Gastroscopic, Roentgen, Sigmoidoscopic and Laboratory Procedures in 500 Gastrointestinal Cases. H. A. Monat and C. M. Thompson.—p. 19.
*Perforation of Esophagus Caused by Flexible Gastroscope: Case Report. W. D. Paul and E. H. Antes.—p. 23.
Gastroscopy: I. Mechanics of Gastroscopy. H. Barowsky.—p. 25.
Tuberculosis of Stomach. C. Windwer.—p. 38.

Perforation of Esophagus Caused by Flexible Gastroscope.—Paul and Antes previously reported a case of perforation of the esophagus by the flexible gastroscope at the University of Iowa Hospital. In that case death resulted within twenty-four hours. They report a similar perforation, which resulted in retropharyngeal abscess formation. Considerable manipulation was necessary in order to pass the instrument into the esophagus. This was undoubtedly a factor in the causation of the retropharyngeal perforation. Prompt recognition and treatment of this complication saved the life of the patient. The 2 cases of perforation occurred in more than 1,850 gastroscopies. This complication has fortunately become rare since the introduction of the flexible gastroscope.

Surgery, St. Louis

19:1-166 (Jan.) 1946

SYMPOSIUM ON CANCER OF BREAST

Experimental Induction of Mammary Cancer. M. B. Shimkin.—p. 1.
Parental Influences on Mammary Tumor Incidence. C. C. Little.—p. 25.
Prognosis of Benign Lesions of Female Breast. S. Warren.—p. 32.
The Bleeding Nipple. O. J. Campbell.—p. 40.
Intraductal Biopsy of Certain Pathologic Processes of Breast. R. Leborgne.—p. 47.
Sarcoma of Breast: Report of 30 Cases. F. E. Adair and J. B. Herrmann.—p. 55.
Histologic Classification of Carcinoma of Breast. F. W. Foote Jr. and F. W. Stewart.—p. 74.
Technic for Radical Mastectomy. C. D. Haagensen.—p. 100.
Treatment of Inoperable Carcinoma of Breast with Irradiation. C. L. Martin.—p. 132.
Problem of Local Recurrence After Radical Mastectomy for Carcinoma. W. C. White.—p. 149.
Survival Rates of Radical Mastectomy for Unilateral and Bilateral Carcinoma of Breast. S. W. Harrington.—p. 154.

Surgery, Gynecology and Obstetrics, Chicago

82:113-238 (Feb.) 1946

Operative Closure of Patent Ductus Arteriosus. A. Blalock.—p. 113.
*Blood Amylase Activity in Pancreatitis and Other Diseases: Simple Diagnostic Aid. D. Polowe.—p. 115.
*Amino Acids in Therapy of Disease: Parenteral and Oral Administrations Compared. S. C. Madden, S. H. Bassett, J. H. Remington, F. J. C. Martin, R. R. Woods and F. W. Shull.—p. 131.
Repair of Large Abdominal Defects by Pedicled Fascial Flaps. O. H. Wangensteen.—p. 144.
Chemotherapy and Control of Infection Among Victims of Cocoanut Grove Disaster. M. Finland, C. S. Davidson and S. S. Levenson. —p. 151.
Experience in Management of Abdominal Wounds of Warfare. F. J. Jarvis, W. L. Byers and E. V. Platt.—p. 174.
Effects of Pedicle Jejunal Transplants in Stomach on Mann-Williamson Dogs. H. C. Saltzstein and I. J. Kurtz.—p. 194.
Primary Carcinoma of Fallopian Tubes. K. A. Lofgren and M. B. Dockerty.—p. 199.
Spontaneous Rupture of Spleen. J. B. Littlefield.—p. 207.
*Accidental Transplantation of Cancer in Operating Room: Case Report. W. W. Brandes, W. C. White and J. B. Sutton.—p. 212.
Intercorporal Bone Graft in Spinal Fusion After Disk Removal. I. A. Jaslow.—p. 215.
Initial Surgical Treatment of Penetrating Wounds of Rectum. H. Lauffman.—p. 219.
Use of Curare in Anesthesia for Thoracic Surgery: Preliminary Report. Phyllis Harroun and H. R. Hathaway.—p. 229.

Blood Amylase Activity in Pancreatitis.—Polowe's study is based on 78 blood amylase activity determinations on 69 patients. Moderate to intense blood amylase activity is almost always associated with disease of the pancreas. Normal or decreased blood amylase activity almost always excludes pancreatitis. Where pancreatitis exists in conjunction with a normal or decreased blood amylase activity it may be safely assumed, if the patient's clinical status bears it out, that the pancreatitis has subsided or is subsiding. A slightly increased activity of the blood amylase may be regarded as indicating pancreatic involvement secondary to pathologic change elsewhere. When in doubt, tests should be repeated every day or every other day. The presence of multiple pathologic changes is the rule rather than the exception in acute pancreatitis. Biliary tract disease is the commonest complicating factor. An attack of acute pancreatitis may be the first clinical sign of the presence of biliary tract disease. In acute pancreatitis a history of repeated attacks of epigastric pain, sometimes dating back several years, may be obtained in almost every case. Decreased or absent blood amylase activity in this series of 69 cases was in no instance associated with acute pancreatitis. The liver is one of the main sources of blood amylase, and decreased or absent blood amylase activity may be interpreted as evidence of impaired liver function. When so interpreted the test should be corroborated by other liver function tests.

Parenteral and Oral Administration of Amino Acids.—Madden and his associates point out that nitrogen balance has been obtained in human beings with threonine, valine, leucine, isoleucine, lysine, tryptophan, phenylalanine and methionine. The mixtures used by the authors contained in addition to the aforementioned eight amino acids, histidine, arginine and aminoacetic acid. For parenteral administration the amino acids were dissolved in distilled water just below the boiling point, filtered and autoclaved and were given intravenously or subcutaneously in 6 to 13 per cent concentrations. In the first patient, who had chronic ulcerative colitis, nitrogen balance and considerable weight gain were obtained during eighty-five days when amino acids furnished the bulk of the nitrogen intake (85 to 93 per cent). Synthetic mixtures of the ten amino acids essential for the growth of rats and aminoacetic acid provided this nitrogen, except for the period when the protein hydrolysate amigen was given. Neither the amino acid mixture nor the protein hydrolysate amigen was quite as well utilized parenterally as orally and neither was quite as well utilized orally as the better natural food proteins. Omission of histidine from a mixture of amino acids resulted in a negative nitrogen balance. During the oral feeding periods nitrogen retention was considerably greater than during the injection periods. The clinical condition of the patient improved. Observations on 2 other patients proved the value of amino acid mixtures in the preoperative and postoperative nutrition. The case of a child with an unhealed burn of one year's duration demonstrated that a high protein intake may shorten illness and save lives and that the best source of a high protein intake is a diet of natural foods—useful and spectacular though parenteral feeding may be. A high protein intake by this protein depleted patient brought about complete healing after all other treatment had failed. The authors stress that proper mixtures of amino acids are capable of providing the protein nitrogen requirements of man and animals over long periods. Indications for the use of amino acids exist only when natural protein cannot be effectively used.

Accidental Transplantation of Cancer in Operating Room.—Brandes and his associates discuss a case in which, several months after a radical mastectomy for a highly malignant scirrhous carcinoma of the breast of a woman aged 47, cancer nodules were found in the skin of the donor site on the opposite thigh. The usual precautions had been taken after biopsy of the tumor and before the mastectomy, viz., changing of operators' and nurses' gloves and redraping and reprepparation of the patient. However, after the mastectomy, when a defect in the skin over the operative site was to be covered, a skin graft was taken from the left anterior thigh without first changing the contaminated gloves used at operation. Washing the gloves in sterile distilled water was apparently insufficient, and tumor cells were transferred from the operative site to the raw donor area, where they survived and gave rise to tumor nodules.

Wisconsin Medical Journal, Madison

45:1-172 (Jan.) 1946

Legal Pitfalls for Medical Men. W. C. Woodward.—p. 33.
Wisconsin's Medical Schools: University of Wisconsin Medical School Madison. W. S. Middleton.—p. 34.
Marquette University School of Medicine Milwaukee. E. J. Carey. —p. 38.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

20:145-188 (Dec.) 1945

Infection in Infancy. R. Cruickshank.—p. 145.
Clinical Material of Health in Pediatrics: Where to Get It and How to Use It. C. McNeil.—p. 151.
Nature of Still's Disease: Report of Case. F. A. Langley.—p. 155.
Decrease of Serum Cholesterol Ester in Hemolytic Disease of Newborn. A. Rothe-Meyer and Evely N. Hickmans.—p. 160.
Osteomyelitis of Jaws in Infancy Treated with Penicillin. N. M. Jacoby and L. Sagorin.—p. 166.
Measurement of Nutritional Level of Thiamine in Children by Estimation of Urinary Excretion. E. C. Allibone and E. Finch.—p. 169.

British Heart Journal, London

8:1-52 (Jan.) 1946

Mechanism of The Wenckebach Type of Auriculoventricular Block. G. M. Decherd and A. Ruskin.—p. 6.
Hypoxemia Tests in Coronary Disease. G. Biörck.—p. 17.
Myxedema with Pericardial Effusion. R. Schnitzer and D. Gutmann. —p. 25.
Angina Pectoris with Associated Left Paroxysmal Ptosis. H. G. Miller and R. Daley.—p. 29.
Induced Changes in Circulation in Constrictive Pericarditis. R. H. Lyons and C. S. Burwell.—p. 33.
*Paravertebral Block and Electrocardiogram in Angina Pectoris. K. Braun.—p. 47.

Paravertebral Block and Angina Pectoris.—Braun studied the electrocardiogram in 12 patients who had frequent attacks of angina pectoris before and shortly after paravertebral sympathetic block. Of 11 cases with cardiographic abnormalities before the block, 8 showed an improvement of the cardiogram. The T waves, which before the block were flat, diphasic, isoelectric or negative, showed a tendency to return to normal. The improvement of the cardiogram did not always coincide with the relief of pain.

British Journal of Radiology, London

19:45-88 (Feb.) 1946

Responsibility for Accidents in Radiologic Departments. W. M. Levitt. —p. 45.
Effective Atomic Number and Energy Absorption in Tissues. F. W. Spiers.—p. 52.
Anaerobic Cellulitis Due to Perforation of Colon: Case Report with Illustration of Radiographic Appearances. F. H. Kemp.—p. 64.
Duplication of Radiography by Solarization. G. H. Illingworth.—p. 66.
Localization of Foreign Bodies in Chest: Practical Report. C. J. Hodson. —p. 70.
Anatomy of Blood Vessels of Human Lung as Applied to Chest Radiology. T. Lodge.—p. 77.

British Medical Journal, London

1:193-226 (Feb. 9) 1946

*Effect of Daily Vitamin Supplement on Health and Development of Children. E. R. Bransby, J. L. Burn, H. E. Magee and D. M. MacKecknie.—p. 193.
Effect of Blast on Human Ear. F. B. Korkis.—p. 198.
Hippuric Acid Test in Pregnancy. W. Laqueur and H. Ovacik.—p. 201.
Sulfapyridine Anuria in Gurkhas. C. W. Healey.—p. 202.
Acute Pancreatitis. N. G. Godfrey.—p. 203.

Effect of Daily Vitamin Supplement on Children.—A total of 1,620 children aged 5 to 14 years attending elementary and secondary schools in Stoke-on-Trent and Salford were divided into two groups, one of which received on each school day for a year (1943-1944) a vitamin capsule containing vitamin A 4,000 international units, vitamin B_1 1 mg., riboflavin 2 mg., nicotinamide 20 mg., ascorbic acid 50 mg. and vitamin D 600 international units. The other group received a placebo free of vitamins. The vitamin supplement had no consistent effect on growth, strength, endurance, fatigue potential, incidence or severity of clinical conditions, hearing and absenteeism from school. In the analysis of the data the children were grouped according to social, economic and nutritional status, but no effects of the vitamin supplement could be discerned on the aforementioned criteria. The vitamin supplement had a beneficial effect on gingivitis in Stoke but not in Salford. Evidence from a further series of trials indicated that ascorbic acid alone has no beneficial effect on that condition. Dietary studies made in conjunction with the test showed that the average ascorbic acid intake in the diets was well below the intake recommended by the National Research Council (United States) and that many children probably had intakes of less than 10 mg. daily over long periods. The absence of effect of the vitamin supplement and the generally good nutritional state of the children threw doubt on the validity of the National Research Council standards.

Glasgow Medical Journal

27:1-28 (Jan.) 1946

Hemoglobin Levels in Blood Donors. Alice J. Marshall.—p. 1.
*Ehlers-Danlos Syndrome: Description of 3 Cases. A. Brown.—p. 7.
Two Cases of Neonatal Tuberculosis. J. Buchanan.—p. 13.

The Ehlers-Danlos Syndrome.—Brown says that the Ehlers-Danlos syndrome is characterized by hyperelasticity of the skin, hyperextensibility of joints and a hemorrhagic tendency. Two of the patients mentioned by the author, a mother and daughter, showed hyperextensibility of joints and a hemorrhagic tendency. In four generations of their family, 19 or 47 individuals were affected by a similar or closely related defect. Among affected members of this family hyperelasticity was minimal in the earlier, and a dominant feature in later, generations. An unusual friability of the skin showed an inverse relationship. A third case is described in which increased friability of skin and subcutaneous tissues was associated with almost entire loss of body hair, slight hyperelasticity of skin and a hemorrhagic tendency. These features developed at the age of 53, and there was no evidence of a hereditary element.

Lancet, London

1:185-220 (Feb. 9) 1946

Chemotherapy of Pneumococcal Meningitis. H. V. Smith, E. S. Duthie and H. Cairns.—p. 185.
Tubercle Bacilli in Pleural Effusion of Young Adults. H. G. Close. —p. 193.
Criteria of Eosinophilia. G. Discombe.—p. 195.
*Nutritive Values of Wheat Flours of Different Extraction Rate. Harriette Chick, A. M. Copping and E. B. Slack.—p. 196.

Nutritive Values of Wheat Flours.—Chick and her associates show that the content of different B vitamins in wheat flours milled to contain 100 per cent (whole wheat), 85 per cent, 80 per cent and 70 per cent (white flour) of the grain, progressively decreases as the degree of extraction is lowered. The B vitamins tested included vitamin B_1 (thiamine), riboflavin, vitamin B_6 (pyridoxine), nicotinic acid, pantothenic acid and biotin. In many tests the content of thiamine and riboflavin in flours of 85 per cent extraction was of the same order as that in whole wheat flour; the content in flours of 80 per cent extraction was usually much less. In growth experiments with young rats a lowering of the growth promoting value of the proteins in the flours was demonstrated when the degree of extraction of the wheat fell from 100 per cent to 70 per cent in spite of the fact that the digestibility of the nitrogen of the latter was greater than that of the former. The productivity of the food and nitrogen consumed when the diet contained flours of 85 per cent extraction was not inferior to that observed with whole wheat (100 per cent) flour; the proportion of the nitrogen consumed which was retained in the rats' bodies was, however, slightly less (24 per cent compared with 26.8 per cent).

Proceedings of Royal Society of Medicine, London

39:59-102 (Dec.) 1945. **Partial Index**

Hypertension. T. I. Bennett.—p. 59.
Training of Clinical Teachers. N. B. Capon.—p. 65.
Tribromethyl Alcohol (Avertin, Bromethol), 1928-1945. G. Edwards. —p. 71.
Lupus Vulgaris Treated with Calciferol. G. B. Dowling and E. W. P. Thomas.—p. 96.

39:103-148 (Jan.) 1946. **Partial Index**

Reflections on Development and Present General Application of Acrylic to Conservative Procedures. R. Cutler.—p. 103.
Discussion on Surgery of Patent Ductus Arteriosus, Infected and Uninfected. J. B. Hunter and others.—p. 107.
Acute Rheumatism in Military History. J. A. Glover.—p. 113.
Cardiac Folk Lore. J. D. Rolleston.—p. 119.
Nonspecific Intestinal Granuloma. E. A. Crook.—p. 123.

Journal de Médecine de Lyon

27:1-44 (Jan. 5) 1946. **Partial Index**

*Analysis of Sternal Puncture in Posthemorragic Anemias. P. Croizat, L. Revol and Che-Yu-Shou.—p. 7.
Clinical Study of Cardiac Output. J. Enselme.—p. 13.
Fifteen Years of Bronchial Endoscopy (1930-1945): Balance; Perspective of Future. P. Mounier-Kuhn.—p. 25.
Treatment of Generalized Idiopathic Epilepsy. M. Girard.—p. 37.

Sternal Puncture in Posthemorrhagic Anemias.—Croizat and his associates studied the sternal punctate of 31 patients with posthemorrhagic anemia following severe hemorrhage from various causes. Medullary hyperplasia observed in all cases was characterized by an increase in the ratio of the erythroblasts, often more than 40 per cent but rarely exceeding 50 per cent. All other medullary changes, particularly decreases of neutrophil granulocytes, were relative or secondary to the erythroblastosis. The cause of the hemorrhage did not have a determining effect on the punctate. The character of the hemorrhage had some influence. The erythroblastosis which resulted from repeated small hemorrhages seemed to be more important than that from severe acute hemorrhages; in the latter cases the hemohistioblasts and the plasmocytes tended to increase. The degree of anemia had little effect on the global ratio of the erythroblasts, but the most immature of these cells were more abundant as the anemia was more pronounced. In all the hypochromic anemias, particularly the posthemorrhagic type, disturbances of the maturation at the erythroblasts may occur and are especially pronounced at the orthochromatic stage. Erythroblastosis starts within the first two days after the hemorrhage and ceases at the time the ratio of the red blood corpuscles is restored to normal.

Presse Médicale, Paris

53:677-688 (Dec. 15) 1945

Staphylococcus Antitoxin: Decade of Therapeutic Application to Diseases Caused by Staphylococcus in Man and in Domestic Animals. G. Ramon, R. Richou, P. Mercier and the late G. Holstein.—p. 677.
Humoral Balance of Hunger Osteopathy. L. de Gennes and G. H. Deltour.—p. 678.
Cholecystography with Biliselectan [β-(4 Oxy-3-5 Diiodophenyl) α-Phenylpropion]. H. Pons.—p. 679.
*Infiltration of Right Splanchnic Nerve: Urgency Treatment of Hyperalgesic Vesicular Syndrome. G. F. Bonnet.—p. 680.

Infiltration of Splanchnic Nerve for Gallbladder Colic.—Bonnet reports 5 cases of severe gallbladder pain in which immediate relief was obtained with procaine hydrochloride infiltration of the right splanchnic nerve. It is suggested that by interrupting the sensory tract of the sensomotor splanchnic nerve the secondary painful reflex contraction of the gallbladder is suppressed. The analgesia may last for days or months. Repeated infiltration at an interval of one or two days is required in the presence of severe biliary colic resistant to morphine or antispasmodics. Procaine hydrochloride infiltration of the right splanchnic nerve should not be performed in acute surgical syndromes. The author recommends the procedure for atony of the gallbladder, biliary colic resistant to morphine or antispasmodics or for patients intolerant to these drugs, and for true biliary dyskinesia, such as hyperkinetic gallbladder and spasm of the sphincter of Oddi.

Monatsschrift für Geburtshilfe u. Gynäkologie, Basel

120:169-224 (Oct.) 1945

Study on Infanticide. P. Hüssy.—p. 13.
Rh Factor: Its Pathologic Significance and Heterospecific Pregnancy. J. P. Hoet, J. Vandenbroucke and P. De Somer.—p. 184.
Size of Nucleus of Follicular Epithelia and of Granulosa Lutein Cells in Human Ovary. E. Hintzsche.—p. 200.
*Comparative Estrogenic Activity of Implanted Crystalline Estradiol or Benzoate Estradiol in Ovariectomized Women. J. Ferin.—p. 214.

Estrogenic Activity of Implanted Crystalline Estradiol.—Ferin compares the estrogenic effect of implants of 50 mg. of estradiol and of 3 mg. of estradiol monobenzoate in women after oophorectomy. Sites for implantation were studied. Implanted pellets of benzoic ester had little or no effect, probably because of slow daily absorption of amounts below the threshold value. Differences were found in the sensitivity of various tissues to estrogenic substance in the same woman and also in the same tissues at various times.

Medicina Clinica, Barcelona

5:171-242 (Sept.) 1945. **Partial Index**

Mental Disturbances Following Use of Quinacrine. E. Guija Morales.—p. 180.
Sepsis of Biliary Origin. J. Pi-Figueras.—p. 184.
Congelation Urticaria. R. Frouchtman.—p. 187.
Residual Induration After Appendectomy. P. Piulachs.—p. 192.
Sciatica by Compression (Diskal Sciatica) and Neuritic or Idiopathic Sciatica. I. De Gispert Cruz.—p. 194.
*Hepatic Cirrhosis Due to Brucellosis. A. Abellán Ayala.—p. 201.
Gangrenous Appendicitis. R. Montagut Cuadrad.—p. 207.
Thrombophlebitis of Cavernous Sinus Cured by Penicillin. R. Doménech-Bladé and G. Giménez Andreu.—p. 209.

Hepatic Cirrhosis and Brucellosis.—Abellán Ayala reports 3 cases of ascitic cirrhosis and brucellosis. The author emphasizes the importance of study of the liver in brucellosis and precaution in the use of arsphenamine and other hepatotoxic drugs in such cases.

Acta Dermato-Venereologica, Stockholm

26:111-204 (Dec.) 1945

*Importance of Bacterial Allergy for Development of Cutaneous Infections Due to Staphylococci. J. Bøe.—p. 111.
Incidence of So-Called Resistant Primary Syphilis in Sweden. C. Brück.—p. 137.
Parallel Striae of Lumbar Area as a Sign of Spina Bifida Occulta. H. G. Hadley.—p. 155.
Rheumatic Fever Eruptions. H. G. Hadley.—p. 157.
Two Types of Joint Complaints by Antisyphilitic Treatment. E. Hollström.—p. 159.
Effects of Sulfur on Skin: Clinical and Experimental Observations with Aqueous Solution of Polythionic Acids ("Polythiosol"). P. Møller and S. Lomholt.—p. 169.
Erythrocyte Sedimentation Rate in Acquired Syphilis. T. E. Olin.—p. 175.

Bacterial Allergy in Cutaneous Infections Due to Staphylococci.—Bøe produced hypersensitiveness of the skin against staphylococcic infection by injecting rabbits with 0.5 cc. of a staphylococcus vaccine intracutaneously. The hypersensitiveness reached a maximum after five to seven weeks and then declined in spite of continued injections. The titer of the hypersensitiveness was determined by the allergic cutaneous reaction produced by the intracutaneous injection of 0.05 cc. of a staphylococcus filtrate in increasing dilutions. Intracutaneous injections of a mixture of decreasing amounts of the filtrate with a constant amount of antitoxic serum did not influence the reaction which developed after the injections of staphylococcus vaccine. Intracutaneous injections with various other bacteria such as hemolytic streptococcus, pneumococcus and Salmonella proved that the cutaneous reaction was specific. Neither by intracutaneous nor by intravenous injections of the serum of sensitized rabbits could the hypersensitiveness be passively transmitted to normal rabbits. In the sensitized rabbits a minimum dose of the bacteria caused considerable local reaction (abscesses) after intracutaneous or subcutaneous injections of either living or formaldehyde-killed cultures. The yellow staphylococcus produced more pronounced reactions in the allergic rabbits than the white "avirulent" staphylococcus, but the latter also produced severe lesions in sensitized animals. White staphylococci produced lesions in rabbits sensitized to yellow staphylococci and vice versa. Attempts to produce furunculosis in the allergic rabbits failed when virulent staphylococci were rubbed into the skin of the animals or when bandages soaked in such cultures were applied to the skin. Intracutaneous or subcutaneous injections of vaccine failed to desensitize the allergic rabbits. After intravenous injections of 5 cc. of the staphylococcus filtrate which contained possibly a factor of hapten nature the rabbits became completely desensitized in a short time. The same effect was produced with the intravenous injection of 10 cc. of a concentrated filtrate. A preliminary therapeutic trial by intravenous injections of the filtrate was made in 3 cases in which there were chronic staphylococcic infections of the skin. In the first case, in which there was severe sycosis of the beard, the treatment was ineffective. In a second case, of furunculosis of the lower extremities, improvement occurred but the disease recurred after treatment was discontinued. In a third case, of severe facial acne, there was definite improvement. In the course of the treatment reactions were observed in all 3 cases which may have been due to impurities in the filtrate.

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Book Notices

Clinical Roentgenology of the Heart. By John B. Schwedel, M.D., Lt.-Commander, M.C.(V.)S., U.S.N.R. Annals of Roentgenology, Volume XVIII. Cloth. Price, $12. Pp. 380, with 749 illustrations. New York: Paul B. Hoeber, Inc., 1946.

Progress in the early detection and understanding of heart disease has been continuous during the past fifty years. Fluoroscopy has not been generally used by cardiologists, but some physicians have studied it and contributed significant observations to our knowledge of the beating heart and its great vessels. Unlike physical examination and electrocardiography, fluoroscopy has not been given its proper recognition as an essential part of a complete examination of the heart. After extensive experience in cardiac fluoroscopy Dr. Schwedel has written a comprehensive yet easily understandable book on the subject. Early chapters deal with methods of examination of the patient, cardiac measurements, normal cardiac contours and variations that accompany age, body build, sex, posture, respiration, phases of the cardiac cycle and other minor features. Suggestions that will be of help to the beginner and of interest to the cardiologist are found among the many sound recommendations in the first chapters. Various chambers of the heart are discussed, beginning with the left ventricle and ending with the right auricle.

Many well chosen and remarkably clear illustrations are interspersed throughout the text. All the illustrations are reproductions of the fluoroscopic image, and the author has done well in avoiding the usual roentgenograms—a practice unfortunately followed by others. The book is printed on a good grade of glossy paper, so that the clarity of the fluoroscopic findings is retained. Many line drawings to the right of the fluoroscopic pictures point out the salient features of the condition under discussion. The author has used remarkable restraint in holding the retouching of fluoroscopic plates to a minimum. Retouching is done only when important features would have been missed or when they appeared so vague that they might have been misinterpreted. Unfortunately there are too few anatomic photographs showing the relation of the heart and great vessels to other structures. With the wealth of clinical and pathologic material available to the author, greater use of photographs of actual pathologic specimens would have added much to the book.

General cardiac enlargement is summarized in a short chapter. The work of Dr. Tinsley Harrison and others should have been briefly mentioned. In the discussion of cardiac measurements there are a number of recognized tables. However, the tables of Hodges, Adams and Gordon for the prediction of normal cardiac area and transverse diameter, using the frontal cardiac silhouette, for children are not included. The discussion of the aorta and diseases of the aorta is well written, thoroughly illustrated and one of the best features of the book. A chapter on the great veins and brachiocephalic vessels is too short to be helpful to those learning fluoroscopy of the cardiovascular system. Changes in the lungs often associated with or following heart disease are adequately discussed. Several excellent photomicrographs of lung tissue show the pathologic condition under discussion. An abundance of well chosen illustrations, proper balance among the several lung conditions and lucid explanations combine to make this chapter one that will help many in the mastery of chest fluoroscopy. Discussions of congenital heart disease and cardiac displacement following changes in the thorax are also thoughtful expositions of less important features of cardiovascular conditions. The section on pericarditis is a little too short. Roentgen kymograms and more electrocardiograms would have added to an understanding of adhesive pericarditis. In spite of these criticisms the volume is a sound, practical guide to physicians interested in cardiology. It will be of assistance to those who wish to learn the technic of cardiac fluoroscopy and will be a guide to the cardiologist in his understanding of some of the phenomena of the beating heart. Books of this kind will make the medical profession realize that no examination of the heart is complete without fluoroscopy.

A Psychiatric Primer for the Veteran's Family and Friends. By Alexander G. Dumas, M.D., and Grace Keen. Cloth. Price, $2. Pp. 214, with illustrations. Minneapolis: University of Minnesota Press, 1945.

This book is exactly what its title describes it to be. It was written in collaboration by a psychiatrist who has had long experience with veterans and a skilful popular writer. The content is sound and substantial. It is centered about the problems of the uninjured veteran, the physically injured man who requires more treatment, the physically injured man who requires only job rehabilitation, and the mentally wounded. Many short case illustrations are used which are sensibly condensed and make their points well. It is a book which relatives of patients in veterans' hospitals and veterans undergoing treatment by physicians under the new Veterans Administration plan will find exceedingly useful. The reviewer faces at the present moment the problem of giving some type of similar information to three hundred Gray Ladies and others who wish to do voluntary work in a veterans' hospital; such a book as this will certainly prove most helpful.

On the critical side, it might be said that the selection of reading might have been better; for example, David H. Fink's "Release from Nervous Tension," announced as likely to "help the reader find and inherit himself," would not receive the endorsement of most psychiatrists. Also the original scheme of the book is the presentation of five women waiting on the station platform of a midwestern town for the arrival of the train bringing home their menfolk from the war. This excellent idea is mentioned in the first chapter and again at the first of each succeeding chapter, but unfortunately it is never carried through, which gives the reader something of a feeling of having been cheated or at least deprived of an interesting opportunity to learn of the interpersonal relationships of veterans and veterans' wives more specifically.

La protection alimentaire des écoliers. Par le Dr. Jean Sutter. Fondation française pour l'étude des problèmes humains. Équipe nutrition. Paper. Price, 150 francs. Pp. 181, with 16 illustrations. Paris: Librairie de Médicin, 1945.

It will surprise no one to find the French working rather desperately on the "food problem" as it affects children of school age. This paper bound brochure (and the paper is of the poorest quality) does not attempt to "solve" the matter of production and distribution. It does, however, cast about for a look at the way other countries, notably England and the United States, are working at the daily food needs of children in their care. The statistics are by no means flattering in spite of our notion that we in America are "the best fed nation in the world," for there in black and white are figures from surveys made in the Bronx and in Manhattan, among other places, to prove that some of our children, at least, go to school hungry. This is, to be sure, disgraceful and is not to be tolerated. In fact, the boards of education in the various cities are much concerned over it, and yet it seems that no city has as yet solved quite completely the matter of distribution. There is still a wanton waste of edibles on farms and in the markets, partly because of the time and distance elements, since most foods are perishable. This may change for the better, now that the frozen food mart is at hand. Strawberries frozen in June are eaten in January and seemingly are right out of the garden. The cost is still a deterrent factor and will remain so for a long time to come. This is a problem the League of Nations took up, but its solution, if any, is not yet at hand. Perhaps the UNO may be able to work it out.

The Physiological Basis of Medical Practice. By Charles Herbert Best, C.B.E., M.A., M.D., Professor and head of Department of Physiology, University of Toronto, Toronto, Canada, and Norman Burke Taylor, V.D., M.D., F.R.S., Professor of Physiology, University of Toronto. A University of Toronto Text in Applied Physiology. Fourth edition. Cloth. Price, $10. Pp. 1,169, with 497 illustrations. Baltimore: Williams & Wilkins Company, 1945.

This volume has had thirteen reprintings as well as an edition in Spanish and Portuguese. In the new edition the book is set in a two column format which saves space and makes easier reading. In the reproduction the size of the illustrations has been reduced and new illustrations have been added. The new material, which represents advancement in medical knowledge, compensates for the deletions. The book is one of the most complete and dependable works available in the field of applied physiology.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

POSTOPERATIVE ORAL FEEDING

To the Editor:—**There is a difference of opinion at our hospital as to the time for routine feeding of postoperative patients. Our staff agrees on the maintenance of the daily requirements of chlorides, carbohydrates and protein administered parenterally in the form of transfusion, plasma, amigen, glucose, saline solution and distilled water. However, opinion differs as to the optimum time for giving fluids and diet by mouth. Some physicians routinely order nothing by mouth for the first twenty-four hours, while others attempt to give a sufficient diet as soon as tolerated. What is the consensus on this point?**

M.D., New Hampshire.

[This inquiry was referred to a surgeon and an internist, whose respective replies follow:]

ANSWER.—Immediately after operation it is undesirable to allow anything to be given by mouth, particularly if the patient has had an abdominal operation or a general anesthetic, because trauma to the abdomen results in a functional physiologic ileus. The length of time that such ileus exists is dependent on a number of factors. Since the ileus is the result of stimulation of the splanchnics, the greater the operative trauma or the longer the persistence of trauma as in peritonitis, the longer the ileus lasts. In cases in which there has been relatively slight trauma, such as an interval appendectomy, physiologic ileus lasts six to eight hours, and following this period sips of tap water or hot broth can be allowed. In cases in which the trauma is more extensive, ileus lasts longer and food should be withheld until the ileus has subsided. In such an instance it is frequently desirable to introduce a duodenal catheter to prevent vomiting. In the absence of extensive trauma, or absence of infection, the ileus usually will have subsided within twenty-four hours. After subsidence of ileus, the best stimulant to peristalsis is the administration of food. One can determine the ability of the gastrointestinal tract to retain food by first giving small amounts of hot tea, fat-free broth or tap water. Following this, cooked cereal can be given. It is important to withhold milk, fruit juices and carbonated drinks in the early postoperative period because of the distention which these substances cause. A well broiled steak is usually tolerated well shortly after the subsidence of the ileus. Dry toast and jello are also tolerated early. A full diet, with the exception of milk, fruit juices and carbonated drinks, is allowed soon after the administration of the more readily assimilated foods mentioned.

ANSWER.—The resumption of oral feeding depends entirely on the nature of the disease, the operation and the postoperative reaction of the patient. It is an individual problem. Influencing factors include fever, appetite, nausea, vomiting, distention and diarrhea.

At present there is a tendency to early ambulation and prompt return to a normal diet. If there is no vomiting after herniotomy, cholecystectomy or appendectomy, water is given by mouth after the operation, followed by other fluids the next day. If these are tolerated, a soft and finally a regular diet is allowed. After gastrectomy or colectomy, parenteral fluids or only water by mouth are continued for several days before solid foods are given, depending on the factors noted.

TREATMENT OF PINWORM INFESTATION IN INFANTS

To the Editor:—**In treating pinworm infestation what is the dose and the method of administration for gentian violet and for hexylresorcinol for a 2½ year old child who will not swallow pills, tablets or capsules? What is the present status of compound santonin tablets as a pinworm treatment and what would be the proper dosage for a 2½ year old child?**

M.D., Massachusetts.

ANSWER.—The accepted treatment of infants for pinworms leaves much to be desired. Infants under the age of 2 will not take tablets, and those under 3 also may object. It is advisable with small children to give the tablet with a spoonful of jam. The treatment agent of choice, gentian violet, cannot be administered except in coated tablets because of the disagreeable staining of the mouth and the saliva; gentian violet stains on clothing and linens cannot be removed. Hexylresorcinol must also be given in coated tablets, because the drug will burn the mucous membranes of the mouth and, furthermore, it is not very effective against pinworms. If gentian violet tablets cannot be administered, the best therapy is the use of nightly enemas given for the same twenty-three day interval during which the older members of the household are taking gentian violet. The value of the enemas may be enhanced by the use of 1:2,000 hexylresorcinol, but isotonic solution of sodium chloride appears to be as effective.

In a critical test, santonin was administered to 20 patients with oxyuriasis in one single daily dose for ten days. Nine still harbored the parasites after this treatment, 3 were negative on seven post-treatment checks and 8 were negative on an inadequate number of post-treatment checks. The efficacy was 55 per cent on the most favorable interpretation of the results. The usual adult dosage of santonin is 1 grain (0.065 Gm.) daily, and Young's rule may be used to calculate the dosage for children, using the apparent age rather than the chronological age.

CARBONATION AND WATER PURIFICATION—QUALITIES OF ALCOHOLIC BEVERAGES

To the Editor:—**Can you advise what effect, if any, the carbonation of water has in disinfecting it? The water used is obtained from wells located several kilometers from the nearest habitation and is untreated except for filtration and reduction of the high iron content. I do not know the extent of carbonation, but the product is similar to seltzer waters in the United States. The question is whether such water can be considered safe for drinking purposes. I should also like to know of some publication dealing with the manufacture of various alcoholic beverages and analyses of their content; i. e., is it the nature of the basic alcohol, impurities or otherwise which determines the difference between one wine or whisky and another?**

James M. Bunce, Captain, M. C., A. U. S.

ANSWER.—Carbon dioxide under pressure may lower the p_H of a liquid sufficiently to inhibit a number of bacteria and may thus tend to reduce the danger of spread of disease agents. The inhibitory activity due to carbonation is, however, variable and uncertain and is dependent on the susceptibility of the different bacteria, the buffer capacity of the liquid, the degree of saturation with carbon dioxide, the temperature and the time. The acidity of beverages carbonated under pressure varies, but the p_H may be as low as 3.0, whereas that of water saturated with carbon dioxide is near 4.0. Carbonated beverages purchased on the open market have been reported to contain viable Escherichia coli and other organisms, at times in large numbers, and experiments in which Eberthella typhosa, Salmonella paratyphi B and Escherichia coli were experimentally inoculated into carbonated tap water and beverages have shown that these organisms may survive for some days in carbonated liquids. Survival of the bacteria was, however, reduced in comparison with that in plain liquids. In milk, carbonation under pressure was found to delay but not to inhibit souring, and in ice cream carbonation failed to reduce the number of bacteria. These facts do not justify reliance on carbonation for water purification, particularly since other methods, such as chlorination, are well known to be effective.

Answers to the questions regarding the qualities of alcoholic beverages can probably best be found in Prescott, S. C., and Dunn, C. G.: Industrial Microbiology, New York, McGraw Hill Book Company, 1940.

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McCulloch, E. C.: Disinfection and Sterilization, Philadelphia, Lea & Febiger, 1936.
Koser, S. A., and Skinner, W. W.: *J. Bact.* **7**: 111, 1922.
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FRIGIDITY AND THE CLITORIS

To the Editor:—**In Queries and Minor Notes in The Journal, Feb. 23, 1946 there is a question on frigidity and the clitoris. The opinion of Greenhill is quoted that the vagina and not the clitoris is the principal sexual organ of the adult woman. It is further stated that frigid women derive sexual excitement and satisfaction from the clitoris. From practical observation in many cases I beg to raise a dissenting voice to these opinions. In the first place I have repeatedly seen many normal, well balanced, adult married women whose complaints of lack of sexual pleasure and orgasm in intercourse were remedied by showing them or their husbands the position of the clitoris. The apparent frigidity was then cured by a change of intercourse position so that the clitoris was stimulated, or by manual stimulation. To maintain that such women possess an infantile and not an adult erotic zone seems fallacious. To call them frigid is a flagrant distortion of fact. In the second place it seems logical on a physiologic basis that the clitoris, which is morphologically similar to the glans penis and possesses the neurogenic mechanism for orgasm by friction, should be the chief source of orgasm rather than the musculomembranous passage of the vagina, especially after the latter has been traumatized by repeated childbirth. In the third place, the estimate of 35 to 75 per cent of women not deriving pleasure from intercourse is undoubtedly true, but it is probably the result of a common lack of understanding of the importance of stimulating the clitoris and not because of frigidity or anatomic infantilism.**

Maurice J. Small, M.D., Parsons, W. Va.

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